D-0425-16 PERMIT

AEC 09280

COAL MINING AND RECLAMATION PERMIT

Issued To: AMERICAN ENERGY CORP
43521 Mayhugh Hill Rd.
Twp Hwy 88
Beallsville, OH 43716

Telephone: (740) 926-9152

Permit Number: D-425
Application Number: D-425-16
Acreage: 0
Underground Acreage: 1327.3

Effective: 03/09/2011
Expires: 10/21/2014

Type of Operation: Underground (Room and Pillar), Underground (Longwall)

CONDITIONS

CONDITION TYPE	DESCRIPTION
Archeology	Prior to repair of ground surface damage from mining related actions, an archaeological clearance from the Division is necessary that also takes into account the identification and review of access route(s) to the damage when necessary.

LOCATION IS NOT AVAILIABLE

The issuance of this permit means only that the application to conduct a coal mining operation meets the requirements of Chapter 1513 of the Revised Code, and as such DOES NOT RELIEVE the operator of any obligation to meet other federal, state or local requirements.

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The water monitoring plan for this permit shall be:

Quality: W-68.0, U-1A, W-2A, U-10, D-10, U-11, U-12, D-12, D-2, D-13, U-13
Quantity: W-68.0, U-1A, W-2A, U-10, D-10, U-11, U-12, D-12, D-2, D-13, U-13

Note: These monitoring requirements are separate from NPDES monitoring requirements.

Signature: _____ BH **Date:** 03/09/2011

John F. Husted, Chief, Mineral Resources Managemen

OPERATOR

F46 Rev: 07/01/2001

APPROVED UNDERGROUND COAL MINING PERMIT APPLICATION

Applicant:

Name: AMERICAN ENERGY CORP
Address: 43521 Mayhugh Hill Rd.
Twp Hwy 88
Beallsville, OH 43716

Application Number: D-425-16

Number of acres in underground workings: 1327.3

Number of surface acres to be affected: 0

The water monitoring plan for this permit shall be:

Quality: W-68.0, U-1A, W-2A, U-10, D-10, U-11, U-12, D-12, D-2, D-13, U-13
Quantity: W-68.0, U-1A, W-2A, U-10, D-10, U-11, U-12, D-12, D-2, D-13, U-13

Note: These monitoring requirements are separate from NPDES monitoring requirements.

This application is APPROVED since it demonstrates and the Division has found that the criteria in paragraph (E) of rule 1501: 13-5-01 of the Administrative Code have been met.

Signature: _____ Date: MAR 0 9 2011

F63 Rev: 07/01/2001

PERMIT SUMMARY SHEET
Division of Mineral Resources Management

Permit Number: D-425

Application Number: D-425-16

See permit cover sheet for specific conditions and hydrologic monitoring requirements.

Inspector's Note:
This summary is designed only to advise you of important provisions of a permit that require your attention and monitoring. Your familiarity with requirements and permitted activities will insure that mining and reclamation occurs as was intended and approved at the time of permit issuance. Please take the time to review relevant provisions of the permit carefully and thoroughly. Should you have questions about this or any permit, please do not hesitate to contact the application manager within the Permitting Section.

Items marked are applicable to this permit:

- ☐ Auger Mining/Highwall Mining
- ☐ Alternate Resoiling Material
- ☐ Blasting Plans
- ☐ Buffer Zone Variance Request (BZVR)
- ☐ Coal Waste Disposal
- ☐ Delay in Contemporaneous Reclamation
- ☐ Excess Spoil Disposal
- ☐ Experimental Mining Practices
- ☐ Federal Lands
- ☐ Mountain Top Removal
- ☐ MSHA Impoundment
- ☐ AML No-Cost Area
- ☐ Prime Farmlands
- ☐ Remining (Reduced Maintenance)
- ☐ Remining (Modified effluent)
- ☐ Remining BMP only Permit
- ☐ Special handling of acid-forming/toxic materials.
- ☐ Beneficial Use of CCB's
- ☐ Public Road Permit
- ☐ Small Area Drainage Exemption (SADE)
- ☐ Steep Slope Mining
- ☐ Slurry Impoundment
- ☐ Test Hole Variance
- ☐ Variance from AOC
- ☐ Wetlands Affectment/Avoidance
- ☐ Within 500' of active UG mine
- ☑ Within 500' of abandoned UG mine
- ☐ Within 100' of a cemetery
- ☐ Within 300' of occupied dwelling
- ☐ Within 300' of public building, church, school, community or institutional building or public
- ☐ Within 1000' of wild, scenic or recreational river
- ☐ OEPA 401/COE 404 permits needed for wetlands or stream affectment and/or reconstruction
- ☐ Tree Planting in Reclamation Plans

Application Manager: Jeff Emmons, Environmental Specialist **Date:** MAR 09 2011

F103 Rev: 07/01/2001

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

UNDERGROUND COAL MINING AND RECLAMATION PERMIT APPLICATION
(UNDERGROUND WORKINGS ONLY)

A. Applicant's Name **American Energy Corporation**

Address **43521 Mayhugh Hill Road**

City **Beallsville** State **OH** Zip **43716**

Telephone **(710) 926-9152**

Employer Identification No. (EIN) **Refer to Addendum to Part 1, Item A**, or

Social Security No. (last 4 digits) XXX-XX-

B. Type of Operation (check appropriate space(s)):

☒ Room and Pillar, ☐ Pillar Extraction, ☒ Longwall, ☐ Other

C. Name of mine **Century Mine**

D. List below the MSHA identification numbers for the mine and for all mine-associated structures requiring MSHA approval on this application area.

33-01070

E. Indicate the exploration permit number(s) or notice of intent (NOI) number(s) that were obtained for this application area.

07-CA-25

F. Did a person other than an employee of the applicant prepare this application?

Yes ☒ No ☐ If "yes," provide:

Preparer's Name **CME Engineering LP**
Address **165 East Union Street, Suite 100**
City **Somerset** State **PA** Zip **15501** Telephone **(814) 443-3344**

OPERATOR

AEC 09284

G. I, the undersigned, a responsible official of the applicant, do hereby verify the information in the complete permit application as true and correct to the best of my information and belief.

Printed Name **Farley Wood** Title **Director of Environmental Compliance and Permitting**

Signature [signature] Date Sept. 1, 2010

Sworn before me and subscribed in my presence this 1st day of September 2010.

[signature]
Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

I. **FOR REVISION REVIEW ONLY:** This item is to be completed after revisions, if any, have been made to the permit application.

I, the undersigned, a responsible official of the applicant, do hereby verify and acknowledge the revisions made during the permit review process as true and correct to the best of my information and belief.

Printed Name **Greg S. Williams** Title **Permit Manager**

Signature G.S. Williams Date 3/7/11

Sworn before me and subscribed in my presence this 7th day of March 20 11

Penny J. Elliott

Notary Public PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

PART 1: LEGAL, FINANCIAL, COMPLIANCE, AND RELATED INFORMATION

A. IDENTIFICATION OF INTERESTS

(1) Is the applicant a single proprietorship? Yes ☐ No ☒ If "yes," provide the following:

Owner's Name

Address

City State Zip Telephone

EIN , or SSN (last 4 digits) XXX-XX-

Beginning date of ownership

If "no," indicate business structure of applicant.

☐ Partnership (registration no. and date obtained)
☒ Corporation (charter no. and date incorporated) **00842695 4-12-1993**
☐ Association
☐ Other, specify

Provide the following for the applicant's statutory agent and submit Owners and Controllers

Agent's Name **C T Corporation System**

Address **1300 East 9th St.**

City **Cleveland** State **OH** Zip **44114** Telephone **(216) 621-4270**

EIN **See Addendum to Part 1, A**, or SSN (last 4 digits) XXX-XX-

(2) Will there be a mine operator other than the applicant?

Yes ☐ No ☒ If "yes" provide the operator's name and submit Operator Ownership and Control (Note: if more than one operator, indicate operator's name and submit a separate form for each).

Operator's Name

(3) Provide the following for the person or entity who will pay the abandoned mine land reclamation fee for the applicant.

Name **American Energy Corporation**

Address **43521 Mayhugh Hill Road**

City **Beallsville** State **OH** Zip **43716** Telephone **(740) 926-9152**

EIN **See Addendum to Part 1, A**, or SSN (last 4 digits - optional) XXX-XX-

ADDENDUM TO PART 1, ITEM A
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425-16

The Social Security Numbers (SSN) and Employer Identification Numbers (EIN) for all individual Owners, Controllers and Corporate entities listed in this application are referenced only in an additional Addendum to Part 1, A. That addendum is held by the respective State Division of Mineral Resource Management personnel in the Permit Review group for the purpose of confidentiality.

American Energy Corp.

Addendum to Part 1, A
(Officer SSN's and Corporate EIN's)

NAME	SSN
BOYLE, SCOTT A.	Decline
CORNELIUS, B.J.	5023
FAYNE, HENRY W.	7216
FORRELLI, JOHN R.	2688
HEIDELBACH, ROY A.	5011
HILL, P. BRUCE	6916
LAWSON, RICHARD L.	4413
LOIACONO, MICHAEL D.	6784
MCKOWN, MICHAEL O.	4552
MOORE, ROBERT D.	9703
MURRAY, ROBERT E.	8852
MURRAY, RYAN	0815
MURRAY, JONATHAN	0811
MURRAY, ROBERT EDWARD	1320
PUTSOCK, ROBERT L.	8460
TURNER, JAMES R.	8372
Van BEVER, CHRISTOPHER G.	2161

CORPORATION NAME	EIN
Murray Energy Corp.	31-1956752
Murray Energy Holdings Co.	20-0100463
American Energy Corp.	31-1550443
Fifth Third Bank Of Northeast Ohio Trustee, (Murray 2003 Trust)	34-7161341
C T Corporation System	51-0006522
The American Coal Company	73-1546124
Andalex Resources Inc.	34-1867389
Andalex Resource Management Inc.	61-0731325
Belmont Coal, Inc.	31-1536602
Energy Resources, Inc.	31-1044044
Genwal Resources, Inc.	87-0533099
KenAmerican Resources, Inc.	61-1264385
Land Restoration Inc. (Merged w/ KenAmerican Resources)	NA
Maple Creek Mining Inc.	25-1755305
Mon-Valley Transportation Center, Inc.	15-1490495
OhioAmerican energy, Inc.	20-3044610
The Ohio Valley Coal Company	34-1041610
The Oklahoma Coal Company	34-1673480
Pennamerican Coal, LP	25-1800870
West Ridge Resources, Inc.	87-0585129
UMCO energy Inc.	52-1615668
UtahAmerican Energy, Inc.	34-1874726
West Virginia Resources, Inc.	55-0713676

(4) Provide the following for all persons having the authority or ability to commit the financial, real property assets, or working resources of the applicant who are not otherwise identified as officers, directors or owners of the applicant. If none, check box: ☒. If any person listed is a business entity and not an individual, also complete Owners and Controllers for that person.

Name

Address

City State Zip Telephone

EIN , or SSN (last 4 digits) XXX-XX-

O & C relationship to entity

Date O & C relationship began/ended (if applicable) /

If necessary, submit additional pages to complete response.

(5) Provide the following for all persons owning or controlling the coal to be mined by another person under a lease, sublease, or other contract and (a) having the right to receive the coal after mining, or (b) having the authority to determine the manner in which another person conducts coal mining operations. If none, check box: ☒. If any person listed is a business entity and not an individual, also complete Owners and Controllers for that person.

Name

Address

City State Zip Telephone

EIN , or SSN (last 4 digits) XXX-XX-

O & C relationship to entity

Date O & C relationship began/ended (if applicable) /

If necessary, submit additional pages to complete response.

(6) List below the person or persons primarily responsible for ensuring that the applicant will comply with Chapter 1513 of the Revised Code and the rules adopted pursuant thereto while mining and reclaiming the area for which this permit is requested.

Farley Wood

(7) Has the applicant, any person or entity listed under items A (4) and (5), or any person or entity listed on the Owners and Controllers who "owned or controlled" or "owns or controls" held a coal mining permit in the United States within the five years preceding the date of this application?

Yes ☒ No ☐ If "yes," submit Permit List.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **American Energy Corporation**

Name **Robert E. Murray**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1,A**

Title of position within entity **President**

Date position assumed/ended (if applicable) **12/15/04 / N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Murray Energy Corporation**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN **See Addendum to Pt 1,A**, or SSN (last 4 digits) xxx-xx-

Title of position within entity **Sole Shareholder**

Date position assumed/ended (if applicable) **2/23/01/**

Percent of ownership **100%** Date of ownership **2/23/01**

Name **Michael O. McKown**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1,A**

Title of position within entity **Secretary**

Date position assumed/ended (if applicable) **11-1-99/**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

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Name of business entity **American Energy Corporation**

Name **James R. Turner**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1,A**

Title of position within entity **Treasurer**

Date position assumed/ended (if applicable) **03-01-05/**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert Putsock**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1,A**

Title of position within entity **Assistant Treasurer**

Date position assumed/ended (if applicable) **1-27-04/**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E Murray**

Street address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1,A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **12/15/04/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

licant's Name **American Energy Corporation**

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Name of business entity **Murray Energy Corporation**

Name **Richard L. Lawson**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **01/28/05/N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E Murray**

eet address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Chief Executive Officer**

Date position assumed/ended (if applicable) **2/23/01/NA**

Percent of ownership **0** Date of ownership **N/A**

Name **Henry W. Fayne**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **01/28/05/N/A**

Percent of ownership **0** Date of ownership **N/A**

ubmit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

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Name of business entity **Murray Energy Corporation**

Name **Robert D. Moore**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **12/17/04/8/01/08**

Percent of ownership **0** Date of ownership **N/A**

Name **P. Bruce Hill**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **12/18/03/11/05/09**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael O. McKown**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Secretary**

Date position assumed/ended (if applicable) **02/23/01/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Corporation**

Name **Robert D. Moore**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Executive Vice President**

Date position assumed/ended (if applicable) **8/01/08 /N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert D. Moore**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Chief Financial Officer**

Date position assumed/ended (if applicable) **9/11/07/NA**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert D. Moore**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **4/23/07/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Corporation**

Name **John R Forrelli**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **9/11/07 /N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **02/23/01/10/21/03**

Percent of ownership **100** Date of ownership **2/23/01-10/21/03**

Name **Robert E Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**8852**

Title of position within entity **President**

Date position assumed/ended (if applicable) **02/23/01/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

AEC 09296

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

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Name of business entity **Murray Energy Corporation**

Name **Michael D Loiacono**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Chief Financial Officer**

Date position assumed/ended (if applicable) **12/20/05 /4/23/07**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael D Loiacono**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **1/28/05/4/23/07**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael D Loiacono**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Treasurer**

Date position assumed/ended (if applicable) **02/23/01/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

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Name of business entity **Murray Energy Corporation**

Name **John R Forrelli**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **12/18/03 /12/17/04**

Percent of ownership **0** Date of ownership **N/A**

Name **G. Christopher Van Bever**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Assistant Treasurer**

Date position assumed/ended (if applicable) **10/22/07/**

Percent of ownership **0** Date of ownership **N/A**

Name

Street address

City State Zip

EIN , or SSN (last 4 digits) xxx-xx-

Title of position within entity

Date position assumed/ended (if applicable) /

Percent of ownership Date of ownership

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Corporation**

Name **Robert Edward Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **09/11/07 /**

Percent of ownership **0** Date of ownership **N/A**

Name **Ryan M. Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President**

Date position assumed/ended (if applicable) **09/11/07 /**

Percent of ownership **0** Date of ownership **N/A**

Name **Roy A. Heidelbach**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Assistant Vice President**

Date position assumed/ended (if applicable) **09/11/07/**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Corporation**

Name **B.J. Cornelius**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN **NA**, or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Vice President-Marketing**

Date position assumed/ended (if applicable) **08/01/08/**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael O. McKown**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN **NA**, or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **General Counsel**

Date position assumed/ended (if applicable) **08/01/08 /**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael O. McKown**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Senior Vice President**

Date position assumed/ended (if applicable) **08/01/08/**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Corporation**

Name **Murray Energy Holdings Co.**

Street address **29325 Chagrin Boulevard, suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN **See Addendum to Pt 1, A**, or SSN (last 4 digits) xxx-xx-

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **N/A/N/A**

Percent of ownership **100** Date of ownership **10/21/03**

Name **Robert E. Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Chairman of the Board**

Date position assumed/ended (if applicable) **02/23/01/N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E. Murray**

Street address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **2/23/01/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Holdings Company**

Name **Robert D. Moore**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN [redacted], or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Chief Financial Officer**

Date position assumed/ended (if applicable) **04/23/07/N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E. Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN [redacted], or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **06/30/03/N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael D. Loiacono**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN [redacted], or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Treasurer**

Date position assumed/ended (if applicable) **1/10/05/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Holdings Company**

Name **Michael McKown**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Secretary**

Date position assumed/ended (if applicable) **06/30/03/ N/A**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert Edward Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **06/30/03/N/A**

Percent of ownership **20 - Class B** Date of ownership **06/30/03**

Name **Ryan Michael Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **Oh** Zip **44122**

EIN , or SSN (last 4 digits) xxx-xx-**See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **06/30/03/N/A**

Percent of ownership **20 - Class B** Date of ownership **06/30/03**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 05/08
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Holdings Company**

Name **Jonathan Robert Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN **See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **06/30/03/ N/A**

Percent of ownership **20 - Class B** Date of ownership **06/30/03**

Name **Robert E Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN **See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **07/09/03/ N/A**

Percent of ownership **20 - Class B** Date of ownership **07/09/03**

Name **Robert D Moore**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN **See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **4/23/07/N/A**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Revised 02/06
DNR-744-9010

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

This attachment is to be completed and submitted with the permit application if the applicant is other than a single proprietorship. Provide the following for all partners, officers, directors, and stockholders owning ten percent or more of any class of voting stock or other instruments of ownership, and any other person performing a function similar to a director. Persons holding or who have held multiple positions must be listed separately for each position. If any owner or controller listed is a business entity and not an individual, also complete an Owners and Controllers for that business entity.

Name of business entity **Murray Energy Holdings Company**

Name **Michael D. Loiacono**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN **See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **6/30/03/ 4/23/07**

Percent of ownership **0** Date of ownership **N/A**

Name **Fifth Third Bank Of Northeast Ohio Trustee, (Murray 2003 Trust)**

Street address **24261 Cedar Rd.**

City **Cleveland** State **OH** Zip **44124**

EIN **See Addendum to Pt 1, A**, or SSN **N/A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **N/A/**

Percent of ownership **20 - Class B** Date of ownership **10/13/2003**

Name **Robert E. Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN , or SSN **See Addendum to Pt 1, A**

Title of position within entity **Shareholder**

Date position assumed/ended (if applicable) **NA/**

Percent of ownership **100 - Class A** Date of ownership **6/27/2003**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 02/06
DNR-744-9010

AEC 09305

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OWNERS AND CONTROLLERS

Applicant's Name **American Energy Corporation**

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Name of business entity **Murray Energy Holdings Company**

Name **Robert E. Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN [redacted], or SSN **See Addendum to Pt 1, A**

Title of position within entity **President**

Date position assumed/ended (if applicable) **06/30/03/ Open**

Percent of ownership **0** Date of ownership **N/A**

Name **Robert E. Murray**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN [redacted], or SSN **See Addendum to Pt 1, A**

Title of position within entity **Chief Executive Officer**

Date position assumed/ended (if applicable) **6/30/03/ Open**

Percent of ownership **0** Date of ownership **N/A**

Name **Michael O. McKown**

Street address **29325 Chargrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44122**

EIN [redacted], or SSN **See Addendum to Pt 1, A**

Title of position within entity **Director**

Date position assumed/ended (if applicable) **06/30/03/NA**

Percent of ownership **0** Date of ownership **N/A**

Submit and identify additional pages necessary to complete response.

Part 1: Section A

Revised 02/06
DNR-744-9010

AEC 09306

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **The Ohio Valley Coal Company**
Address **56854 Pleasant Ridge Road**
City **Alledonia** State **OH** Zip **43902**
Telephone **740-926-1351**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
D-0360	**OH**	**DMRM**	**33-01159/5-27-88**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **American Energy Corporation**
Address **43521 Mayhugh Hill Road Twp. Highway 88**
City **Beallsville** State **OH** Zip **43716**
Telephone **740-926-9152**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
D-0425	**OH**	**DMRM**	**33-01070/10-22-84**
D-1159	**OH**	**DMRM**	**33-02122/01-26-98**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

AEC 09308

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Belmont Coal, Inc.**
Address **P.O. Box 146**
City **Powhatan Point** State **OH** Zip **43942**
Telephone **740-795-5200**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
D-1020	OH	DMRM	33-04397/7-31-97
D-0241	OH	DMRM	33-03048/7-2-93

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

AEC 09309

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Energy Resources, Inc.**
Address **PO Box 259**
City **Brockway** State **PA** Zip **15824**
Telephone **814-265-8021**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
24010101	PA	DEP	36-02695/05-25-88
24900104	PA	DEP	36-02695/05-25-88
24900103	PA	DEP	36-02695/05-25-88
24960101	PA	DEP	36-02695/05-25-88
24970102	PA	DEP	36-02695/05-25-88
24970103	PA	DEP	36-02695/05-25-88

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Energy Resources, Inc.**
Address **PO Box 259**
City **Brockway** State **PA** Zip **15824**
Telephone **814-265-8021**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
24030102	PA	DEP	36-02695/05-25-88
33901602	PA	DEP	36-02695/05-25-88
17930120	PA	DEP	36-02695/05-25-88
24880101	PA	DEP	36-02695/05-25-88
24880103	PA	DEP	36-02695/05-25-88
24890101	PA	DEP	36-02695/05-25-88
24890102	PA	DEP	36-02695/05-25-88
24990101	PA	DEP	36-02695/05-25-88
24970101	PA	DEP	36-02695/05-25-88
24980101	PA	DEP	36-02695/05-25-88

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

AEC 09311

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Maple Creek Mining Company**
Address **981 Route 917**
City **Bentleyville** State **PA** Zip **15314**
Telephone **724-258-2056**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
63841302	**PA**	**DEP**	**36-00970/6-30-95**
63733706	**PA**	**DEP**	**36-00970/6-30-95**
63723707	**PA**	**DEP**	**36-00970/6-30-95**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, Director

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entitv **OHIOAMERICAN ENGERY, INCORPORATED**
Address **29325 Chagrin Blvd., Suite 300**
City **Pepper Pike** State **OH** Zip **44122**
Telephone **216-765-1240**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
D-2180	OH	DMRM	33-04387/10-26-07
D-2291	OH	DMRM	33-04550/3-12-07
D-2304	OH	DMRM	33-04550/10-26-07
D-2312	OH	DMRM	33-04550/2-26-08

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Mon-Valley Transportation Center, Inc.**
Address **PO Box 135, 1060 Ohio Ave.**
City **Glassport** State **PA** Zip **15054**
Telephone **412-673-1500**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
02851602	**PA**	**DEP**	**36-08678/6-8-1995**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

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DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Andalex Resources Management, Inc.**
Address **P.O. Box 902, 6750 N. Airport Rd.**
City **Price** State **UT** Zip **84501**
Telephone **435-637-5385**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
C/007/019	**UT**	**DOGM**	**42-02028/4-1-89** **42-01474/7-1-78**
C/007/033	**UT**	**DOGM**	**42-01864/-1-84**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

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DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Andalex Resources, Inc.**
Address **P.O. Box 10**
City **Drakesboro** State **KY** Zip **42337**
Telephone **502-476-2287**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
8750028	**KY**	**DSMRK**	**1503998/Unavailable**
8890107	**KY**	**DSMRK**	**1512302/Unavailable**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Murray Energy Corp. owner 100%

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Revised 07/08
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **PENNAMERICAN COAL, LP**
Address **PO Box 459**
City **Black Lick** State **PA** Zip **15716-0459**
Telephone **724-248-1327**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
32951301	**PA**	**DEP**	**36-08525**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, Shareholder

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **The American Coal Company**
Address **29325 Chagrin Blvd.**
City **Pepper Pike** State **OH** Zip **44122**
Telephone **216-765-1240**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
02	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98
255	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98
257	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98
306	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98
352	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98
1410	IL	OFFICE OF MINES AND MINERALS	11-02752/10-14-98

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, President

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **TDK Coal Sales**
Address **PO Box 259**
City **Brockway** State **PA** Zip **15824**
Telephone **814-865-8021**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
03960103	PA	DEP	36-07707/1-14-97
03940101	PA	DEP	36-07707/6-6-95
16910104	PA	DEP	36-07707/5-11-92
33960109	PA	DEP	36-07707/3-03-98
16980102	PA	DEP	36-07707/9-10-98
24970104	PA	DEP	36-08867/9-10-98

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

Revised 07/08
DNR-744-9014

AEC 09319

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **The Oklahama Coal Company**
Address **29325 Chagrin Blvd.**
City **Pepper Pike** State **OH** Zip **44122**
Telephone **216-765-1240**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
D-0230	**OH**	**DMRM**	**N/A**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **UMCO Energy Inc.**
Address **981 Route 917**
City **Bentlevville** State **PA** Zip **15314**
Telephone **724-258-2056**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
63921301	**PA**	**DEP**	**36-08375/6-8-94**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, Director

Part 1: Section A

Revised 07/08
DNR-744-9014

AEC 09321

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entitv **UtahAmerican Energy, Inc.**
Address **794 North C Canvon Road**
City **East Carbon** State **Utah** Zip **81520**
Telephone **435-888-4000**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
ACT/007/013	**UT**	**DOGM**	**42-02241/2-24-99**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Robert E. Murray, shareholder 100%

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **Genwal Resources Inc.**
Address **794 North C Canyon Road**
City **East Carbon** State **Utah** Zip **84520**
Telephone **435-564-4010**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
ACT/015/032	**UT**	**DOGM**	**4202356/1-05-95**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

Revised 07/08
DNR-744-9014

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PERMIT LIST

Applicant's Name **American Energy Corporation**

Submit the following information for each coal mining operation owned or controlled by either the applicant or by any person who owns or controls the applicant.

Name of Business Entity **West Ridge Resources Inc.**
Address **794 North C Canyon Road**
City **Price** State **Utah** Zip **84501**
Telephone **435-564-4000**
EIN **Refer to Part 1, Item A** or SSN (last 4 digits) XXX-XX-

Permit Number	State	Regulatory Authority	MSHA Number and Date Issued
ACT/007/041	**UT**	**DOGM**	**4202233/8-09-06**

If not previously provided, indicate the ownership or control relationship of the business entity with the applicant, including percent of ownership and location in organizational structure:

Part 1: Section A

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(2) Provide the following information for the holders of record of any leasehold interest in the coal to be mined.

Leaseholder Name **Consolidated Land Company**

Address **29325 Chagrin Boulevard, Suite 300**

City **Pepper Pike** State **OH** Zip **44124** Telephone **(216) 765-8333**

Leaseholder Name **American Energy Corporation**

Address **43521 Mayhugh Hill Road**

City **Beallsville** State **OH** Zip **43716** Telephone **(740) 926-9152**

Submit and identify additional pages necessary to complete response.

(3) Are there purchasers of record under a real estate contract of the coal to be mined?

Yes ☐ No ☒ If "yes," submit Purchasers of Record.

(4) Is any owner, holder or purchaser listed in items C (1) or (2), a business entity other than a single proprietorship?

Yes ☒ No ☐ If "yes," submit Other Business Entities.

(5) Does the applicant hold lands, interests in lands, options or pending bids on interests for lands that are contiguous to this application area?

Yes ☒ No ☐ If "yes," list those that are contiguous to this application area.

American Energy Corp. owns. There is no further mining proposed on areas immediately adjacent to the application area as those areas have been previously mined or are currently being mined. See Future Areas Map as an Addendum to this item.

(6) Is it anticipated that mining permits would be sought for any of those lands described in item C (5) above?

Yes ☐ No ☒ If "yes," describe contiguous properties for which permits may be sought, to include the size, sequence and timing of future mining permits.

(7) Identify the right of entry documentation that is being provided that allows for coal mining operations within the underground workings:

☐ A copy of the right-of-entry documents attached as addenda, or
☒ A Right-of-Entry Affidavit

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **American Energy Corporation**

Statutory agent **A & H Statutory Service Corporation**

Street Address **1100 Huntington Bldg**

City **Cleveland** State **Ohio** Zip **44114-1425**

Person's name **Robert E. Murray** Position **Director, President**

Street Address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

Person's name **Michael McKown** Position **Secretary**

Street Address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

Person's name **James Turner Jr.** Position **Treasurer**

Street Address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

Person's name **Robert Putsock** Position **Assistant Treasurer**

Street Address **43521 Mayhugh Hill Road**

City **Beallsville** State **Ohio** Zip **43716**

Part 1: Section C

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **Consolidated Land Company**

Statutory agent **Stephen C. Ellis #842696**
Street Address **925 Euclid Avenue, Suite 1100**
City **Cleveland** State **Ohio** Zip **44115**

Person's name **Robert D. Moore** Position **President, Treasurer, Assistant Secretary**
Street Address **29325 Chagrin Boulevard, Suite 300**
City **Pepper Pike** State **Ohio** Zip **44124**

Person's name **Michael O. McKown** Position **Secretary**
Street Address **29325 Chagrin Boulevard, Suite 300**
City **Pepper Pike** State **Ohio** Zip **44124**

Person's name **Elmer A. Mottillo** Position **Assistant Secretary**
Street Address **29325 Chagrin Boulevard, Suite 300**
City **Pepper Pike** State **Ohio** Zip **44124**

Person's name Position
Street Address
City State Zip

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **North American Coal Royalty Company**

Statutory agent **CSC Lawyers Inc Service (Corporation Service Company)**
Street Address **50 West Broad Street Suite 1800**
City **Columbus** State **Ohio** Zip **43215**

Person's name **Thomas Koza** Position **Director**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Thomas Koza** Position **Vice President**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Thomas Koza** Position **Secretary**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Robert Benson** Position **Director**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Part 1: Section C

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **North American Coal Royalty Company**

Statutory agent

Street Address

City State Zip

Person's name **Andrew Good** Position **Secretary**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Dan Swetich** Position **Director**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

Person's name **James Melchior** Position **Director**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

Person's name **James Melchior** Position **Vice President**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **North American Coal Royalty Company**

Statutory agent

Street Address

City State Zip

Person's name **Douglas Darby** Position **Director**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Bob Carlton** Position **Director**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Bob Carlton** Position **Vice President**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Michael Gregory** Position **Director**
Street Address **14785 Preston Road Suite 100**
City **Dallas** State **Texas** Zip **75240-7891**

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

OTHER BUSINESS ENTITIES

Applicant's Name **American Energy Corporation**

A separate attachment is to be submitted for each business entity.

Name of business entity **North American Coal Royalty Company**

Statutory agent

Street Address

City State Zip

Person's name **Lee Burton** Position **Controller**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

Person's name **Otes Bennett Jr** Position **Director**

Street Address **14785 Preston Road Suite 100**

City **Dallas** State **Texas** Zip **75240-7891**

Person's name Position

Street Address

City State Zip

Person's name Position

Street Address

City State Zip

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **James R. Turner, Jr.** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Lease**

Execution Date **1/20/1999**

Expiration Date **None**

Parties: From **Natural Resource Partners, LP** to **American Energy Corporation**

Description of land: Number of Acres **1294.7**

County **Belmont** Township **Washington**

Section **3, 4, 9, 15, 10** Lot

Explanation of legal rights claimed **See Addendum to Part1, Item C(7)(b)**

Pending litigation Yes ☐ No ☒

Signature of Affiant	Date	Position
	2/4/11	TREASURER

Sworn to before me and subscribed in my presence this 4th day of, February, 2011

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **James R. Turner, Jr.** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Lease**

Execution Date **February 1, 2002**

Expiration Date **Until all mineable and merchantable coal has been depleted**

Parties: From **Consolidated Land Company** to **American Energy Corporation**

Description of land: Number of Acres **36.6**

County **Belmont** Township **Washington**

Section **9 & 15** Lot

Explanation of legal rights claimed **See Addendum to Right-of-Entry Affidavit**

Pending litigation Yes ☐ No ☒

Signature of Affiant	2/4/11	TREASURER
	Date	Position

Sworn to before me and subscribed in my presence this 4th day of, February, 2011

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Lease**

Execution Date **October 30, 2010**

Expiration Date **October 30, 2015**

Parties: From **Paul and Martha Scott Jr.** to **American Energy Corporation**

Description of land: Number of Acres **15.0**

County **Belmont** Township **Washington**

Section **9** Lot **Map ID #10-69**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

Signature of Affiant	Date	Position
	2/15/2011	Regional Land Manager

Sworn to before me and subscribed in my presence this 15th day of, February, 2011

Notary Public PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Lease**

Execution Date **February 15, 2011**

Expiration Date **February 15, 2016**

Parties: From **The Ohio Valley Coal Company** to **American Energy Corporation**

Description of land: Number of Acres **290.5**

County **Belmont** Township **Washington**

Section **4** Lot **Map ID #10-88**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	Land Manager
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February 2011

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Lease**

Execution Date **February 15, 2011**

Expiration Date **February 15, 2016**

Parties: From **Oklahoma Coal Company** to **American Energy Corporation**

Description of land: Number of Acres **80.0**

County **Belmont** Township **Washington**

Section **3** Lot **Map ID #10-89**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	Land Manager
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February, 2011

Penny J. Elliott
Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

Part 1: Section C

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **September 7, 2010; September 18, 2010**

Expiration Date **September 7, 2015; September 18, 2015**

Parties: From **John B. and Patricia A. Rosen; Sandra L. and Scott G. Moretz** to **American Energy Corporation**

Description of land: Number of Acres **151.4; 136.6**

County **Belmont** Township **Washington**

Section **3 & 10; 3 & 9** Lot **Map ID #10-87 & 10-62; 10-86 & 10-89**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	**Land Manager**
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February 20 11

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **September 4, 2010; September 14, 2010**

Expiration Date **September 4, 2015; September 14, 2015**

Parties: From **Matthew J. Thompson; Randy L. & Nancy L. Boan** to **American Energy Corporation**

Description of land: Number of Acres **197.5; 231.4**

County **Belmont** Township **Washington**

Section **15; 10** Lot **Map ID #10-57; 10-63**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	Land Manager
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February, 20 11

Penny J. Elliott
Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **April 29, 2010; September 6, 2010**

Expiration Date **None**

Parties: From **Ted Opat; Stanley Passmore** to **American Energy Corporation**

Description of land: Number of Acres **5.0; 163.8**

County **Belmont** Township **Washington**

Section **9; 3 & 9** Lot **Map ID #10-68; 10-74**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	Land Manager
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February, 20 11

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **March 15, 2010; December 16, 2010**

Expiration Date **Open**

Parties: From **Harry L. Saffell; Charlotte McCoy** to **American Energy Corporation**

Description of land: Number of Acres **48.4; 22.9**

County **Belmont** Township **Washington**

Section **9; 9** Lot **Map ID #10-73; 10-77**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	**Land Manager**
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February 2011

Penny J. Elliott
Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **September 9, 2010**

Expiration Date **September 9, 2015**

Parties: From **James and Cynthia Kosmos; Gregory P. Morris; The Captina Hunt Club; Anthony Cline** to **American Energy Corporation**

Description of land: Number of Acres **206.0; 131.2; 205.4; 5.0**

County **Belmont** Township **Washington**

Section **4, 9 & 10; 9 & 15; 9; 9** Lot **Map ID #10-64; 10-66 & 10-72; 10-65; 10-67**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	**Land Manager**
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February, 20 11

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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AEC 09341

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

RIGHT-OF-ENTRY AFFIDAVIT

Applicant's Name **American Energy Corporation**

RIGHT-OF-ENTRY AFFIDAVIT

State of **Ohio**, **Belmont** County, ss. **Ernie Banks** being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document **Deed**

Execution Date **September 8, 2010**

Expiration Date **September 8, 2015**

Parties: From **Joseph J. & Barbara A. Petro** to **American Energy Corporation**

Description of land: Number of Acres **9.3**

County **Belmont** Township **Washington**

Section **9** Lot **Map ID #10-71**

Explanation of legal rights claimed **See Addendum to Part 1, C(7) Summary of Subsidence Rights**

Pending litigation Yes ☐ No ☒

	2/15/2011	Land Manager
Signature of Affiant	Date	Position

Sworn to before me and subscribed in my presence this 15th day of, February, 20 11

Penny J. Elliott

Notary Public

PENNY J. ELLIOTT
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

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(8) Does the applicant, any person or entity listed under items A (4) and (5), or any person or entity listed on Owners and Controllers have a pending coal mining application in any state of the United States?

Yes ☒ No ☐ If "yes," submit Pending Application List.

(9) Submit Certificate of Insurance.

B. COMPLIANCE INFORMATION

(1) Has the applicant, any subsidiary, affiliate or persons controlled by or under common control with the applicant:

(a) Had a federal or state coal mining permit suspended or revoked in the five years preceding the data of submission of this application?

Yes ☐ No ☒ If "yes," submit Suspension, Revocation & Forfeiture List.

(b) Forfeited a mining bond or similar security deposited in lieu of bond?

Yes ☐ No ☒ If "yes," submit Suspension, Revocation & Forfeiture List.

(2) Has the applicant been issued notices of violation (NOVs) in connection with any coal mining and reclamation operation during the three years preceding the date of submission of this application for violations of Chapter 1513 of the Revised Code or the Administrative Code, or of any federal or state law, rule, or regulation pertaining to air or water environmental protection?

Yes ☒ No ☐ If "yes," submit NOV List.

(3) Have any unabated federal or state cessation orders (COs) and unabated air and water quality notices of violations (NOVs) been received prior to the submission date of this application by any coal mining and reclamation operation owned or controlled by either the applicant or by any person who owns or controls the applicant?

Yes ☐ No ☒ If "yes," submit Unabated Violations.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **American Energy Corporation**

Application No.	Name of Regulatory Authority	State
D-0425-8	DMRM	OH
D-0425-11	DMRM	OH
D-0425-16	DMRM	OH

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **Energy Resources, Inc.**

Application No.	Name of Regulatory Authority	State
17841607	**DEP**	**PA**
17823701	**DEP**	**PA**

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **KENAMERICAN COAL COMPANY**

Application No.	Name of Regulatory Authority	State
889-5009 R-8	**natural resources & environmental cabinet - Dept of surface mining reclamation and enforcement**	**KY**
889-9004	**natural resources & environmental cabinet - Dept of surface mining reclamation and enforcement**	**KY**

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **OhioAmerican Energy, Inc.**

Application No.	Name of Regulatory Authority	State
10395	ODNR, DMRM	OHIO
D-2180-1	ODNR, DMRM	OHIO
D-2304-1	ODNR, DMRM	OHIO

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **TDK Coal Sales, Inc.**

Application No.	Name of Regulatory Authority	State
17814607	**DEP**	**PA**
17823701	**DEP**	**PA**

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **THE OHIO VALLEY COAL COMPANY**

Application No.	Name of Regulatory Authority	State
D-0360-14	DMRM	OHIO
D-0360-22	DMRM	OHIO

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PENDING APPLICATION LIST

Applicant's Name **American Energy Corporation**

Provide the following information for each pending coal mining application for either the applicant or any person who owns or controls the applicant.

Indicate the business entity for which this listing has been completed **UMCO Energy, Inc. - High Quality Mine**

Application No.	Name of Regulatory Authority	State
63921301	PA DEP	PA

Part 1: Section A

Revised 02/06
DNR-744-9035

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

CERTIFICATE OF INSURANCE

Name of Insured **American Energy Corporation**

This is to certify that the policy of insurance listed below has been issued to the above named insured and is in force at this time. The policy provides bodily injury and property damage insurance for all coal mining and reclamation operations of the insured in the state of Ohio as required by 1501:13-7-07 of the Administrative Code stated below.

Name of Insurer **Federal Insurance Company**

Policy Number **37104410**

Policy Period **6/1/10-11**

Name of Underwriting Agent **Reschini Agency, Inc.**

Address of Underwriting Agent **922 Philadelphia St., Indiana, PA 15701**

Telephone No. of Underwriting Agent **724 349-1300**

In the event of cancellation or non-renewal of this policy, including non-payment of policy premiums, the insurer agrees to promptly notify: The Division of Mineral Resources Management, 2045 Morse Road, Building H-3, Columbus, Ohio 43229-6693.

6/2/10
Date

Karen Williams
Signature of Underwriting Agent

This certificate is issued as a matter of information only and confers no rights upon the Division of Mineral Resources Management. This certificate does not amend, extend or alter the coverage afforded by the policy listed above.

1501:13-7-07(B) THE PUBLIC LIABILITY INSURANCE POLICY SHALL:

(1) BE IN EFFECT DURING THE TERM OF THE PERMIT OR ANY RENEWAL, INCLUDING THE LENGTH OF ALL RECLAMATION OPERATIONS;

(2) PROVIDE FOR PERSONAL INJURY AND PROPERTY DAMAGE PROTECTION IN AMOUNTS ADEQUATE TO COMPENSATE ANY PERSONS INJURED OR PROPERTY DAMAGED AS A RESULT OF COAL MINING AND RECLAMATION OPERATIONS, INCLUDING THE USE OF EXPLOSIVES. THE MINIMUM INSURANCE COVERAGE FOR BODILY INJURY AND PROPERTY DAMAGE SHALL BE THREE HUNDRED THOUSAND DOLLARS FOR EACH OCCURRENCE AND FIVE HUNDRED THOUSAND DOLLARS IN THE AGGREGATE; AND

(3) INCLUDE A RIDER REQUIRING THAT THE INSURER NOTIFY THE CHIEF WHENEVER SUBSTANTIVE CHANGES ARE MADE IN THE POLICY, INCLUDING ANY TERMINATION OR FAILURE TO RENEW.

Part 1: Section A

Revised 02/06
DNR-744-9034

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

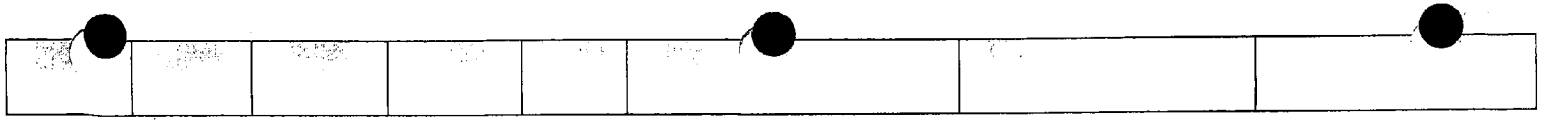
NOV LIST

Applicant's Name **American Energy Corporation**

Permit Number	Violation Number	Date of Issuance	Issuing Agency	State	Brief Description of NOV	Action Taken to Abate NOV	Current Status of NOV (*)
D-0425	21807	1-25-05	ODNR	OH	W-401 Water Buffalo is out of water at the Neal Moore dairy farm site	Restored W-401 water buffalo by filling with water	Terminated 1/25/08 9:00 P.M.
D-0425	1995	4-27-05	ODNR	OH	Operator failed to maintain Pond 008-A and sump (next to 018-A)	Reconstruct embankment to pond 008-A and sump	Terminated 6/10/05
D-0425	19696	4-27-05	ODNR	OH	Coal has come off and accumulated downslope of the raw stockpile increasing PH and Iron levels in Pond 008-A	Remove all coal that has accumulated downslope of the raw stockpile	Terminated 6/10/05
D0425	19697	4-2705	ODNR	OH	Failure to maintain haul road/ access road between pond 011 and 008 series pond	Construct sumps to control drainage coming off roadway	Terminated 6/10/05
D-0425	1-11726	8-23-05	ODNR	OH	Uncontrolled discharge	isolate and clean spill	Terminated 6/30/05
D-0425	21871	10-3-05	ODNR	OH	Failure to submit site specific plans and time schedule for repair or mitigation for the Moore farm	Came to an agreement with land owner on remedial actions	Terminated 8/2/06
D-1159	21860	9-15-06	ODNR	OH	Failure to segregate and stockpile prime farmland soils prior to disturbance	Segregate stockile and protect prime farmland soild necessary for PFL restoration	Termianted 12/31/06
D-0425	28434	6-27-07	ODNR	OH	Failure to provide written notice to surface owner at least six months prior to undermining	Non-remedial	Non-remedial
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

AEC 09352

Revised 02/06
DNR-744-9016



(*) If administrative or judicial proceedings have been initiated concerning any of the violations, identify the violation and provide an addendum indicating the date, location, type of proceeding, and current status.

C. RIGHT OF ENTRY INFORMATION

LAND OWNER INFORMATION	OWNERSHIP INFORMATION	COUNTY	TOWNSHIP	SECTION	LOT	DEED PARCEL NO.	T-	R-
OWNER NAME: **American Energy Corporation** ADDRESS: **43521 Mayhugh Hill Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-9152**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**3**		**T2-187A1, T1-187A1, T4-187A1, T2-203, T1-203, T3-187A1**	**5**	**4**
OWNER NAME: **American Energy Corporation** ADDRESS: **43521 Mayhugh Hill Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-9152**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**9**		**T9-187A2, 127, T6-187A2, T7-187A2, T5-187A1, 187C, T8, T13, T14, T 7, T10-187A2, 187B**	**5**	**4**
OWNER NAME: **American Energy Corporation** ADDRESS: **43521 Mayhugh Hill Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-9152**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**10**		**127, T1-125A, T11-187A2, 195**	**5**	**4**
OWNER NAME: **American Energy Corporation** ADDRESS: **43521 Mayhugh Hill Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-9152**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**15**		**127, T16, T15, T 9-1**	**5**	**4**

AEC 09354

C. RIGHT OF ENTRY INFORMATION

LAND OWNER INFORMATION	OWNERSHIP INFORMATION	COUNTY	TOWNSHIP	SECTION	LOT	DEED PARCEL NO.	T-	R-
OWNER NAME: **Charles Caldwell & Harold Scott** ADDRESS: **53101 Clover Ridge Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-1254**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**9**		**T12, T13, T 10, T 15**	**5**	4
OWNER NAME: **Paul E Scott Jr.** ADDRESS: **62580 Chestnut Level Road** CITY, STATE, ZIP: **Belmont, OH 43718** TELEPHONE: **740-686-2479**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**9**		**T14**	**5**	4
OWNER NAME: **Heenan, Michael** ADDRESS: **6702 NW Dogwood Drive** CITY, STATE, ZIP: **Vancouver, WA 98663** TELEPHONE: **N\A**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**9**		**T7-187A2, T 15**	**5**	4
OWNER NAME: **Hendershot, David L** ADDRESS: **55139 Clover Ridge Road** CITY, STATE, ZIP: **Jacobsburg, Ohio 43933** TELEPHONE: **N\A**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**3**		**T1-203**	**5**	4

AEC 09355

C. RIGHT OF ENTRY INFORMATION

LAND OWNER INFORMATION	OWNERSHIP INFORMATION	COUNTY	TOWNSHIP	SECTION	LOT	DEED PARCEL NO.	T-	R-
OWNER NAME:**VL, III & MA Thompson** ADDRESS: **7004 S Dewey Road** CITY, STATE, ZIP: **Amherst, Ohio 44001** TELEPHONE: **N\A**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**15**		**T17, T18, T16, 127-1**	**5**	**4**
OWNER NAME: **The Ohio Valley Coal Company** ADDRESS: **153 Highway 7 South** CITY, STATE, ZIP: **Powhatan Point, Ohio 43942** TELEPHONE: **740-695-8804**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**3** **4**		**T2-194** **188, T1-194, T3, 195-1**	**5**	**4**
OWNER NAME: **American Energy Corporation** ADDRESS: **43521 Mayhugh Hill Road** CITY, STATE, ZIP: **Beallsville, Ohio 43716** TELEPHONE: **740-926-9152**	☒ Surface – UG Workings area ☐ Coal ☒ Non-coal mineral	**Belmont**	**Washington**	**4**		**195**	**5**	**4**
OWNER NAME: ADDRESS: CITY, STATE, ZIP: TELEPHONE:	☐ Surface – UG Workings area ☐ Coal ☐ Non-coal mineral							

AEC 09356

C. RIGHT OF ENTRY INFORMATION

LAND OWNER INFORMATION	OWNERSHIP INFORMATION	COUNTY	TOWNSHIP	SECTION	LOT	DEED PARCEL NO.	T-	R-
OWNER NAME: **Natural Resource Partners, LLP** ADDRESS: **601 Jefferson Street, Suite 3600** CITY, STATE, ZIP: **Houston, Texas 77002** TELEPHONE: **713-751-7507**	☐ Surface – UG Workings area ☒ Coal ☐ Non-coal mineral	**Belmont**	**Washington**	**3** **4** **9** **10** **15**		**T2-187A1, T1-187A1, T4-187A1, T2-194, T3-187A1, T2-203, T1-203** **T1-194, 188, 195, 195-1, T3** **187B, T10-187A2, 187C, T5-187A1, T7-187A2, T6-187A2, T12, T13, T14, 127, T9-187A2, T8** **127, T1-125A, T11-187A2, 195** **T16, 127, 127-1, T18, T17, T15**	**5**	**4**
OWNER NAME: **North American Coal Royalty Company** ADDRESS: **14785 Preston Road, Suite 1100** CITY, STATE, ZIP: **Dallas, TX 75254** TELEPHONE: **972-239-2625**	☐ Surface – UG Workings area ☒ Coal ☐ Non-coal mineral	**Belmont**	**Washington**	**9** **15**		**T 15, T 10, T 7** **T 9-1**	**5**	**4**
OWNER NAME: ADDRESS: CITY, STATE, ZIP: TELEPHONE:	☐ Surface – UG Workings area ☐ Coal ☐ Non-coal mineral							

AEC 09357

AMERICAN ENERGY CORP.
CENTURY MINE
PERMIT D-0425-16
ADDENDUM TO PART 1, C(7)

Summary of Subsidence Rights

The following are descriptions and language excerpts from Deeds or Leases of properties recently acquired by American Energy Corp. within the application area. The language describes surface rights of the Applicant which allows subsidence as AEC already has coal ownership or lease rights to the coal underlying these properties as described in the Mining Rights Summary. These records of agreement are all recorded and on file at the Belmont County Recorder.

The following language is in the agreements, deeds or leases between American Energy Corp. and the respective property owners, where the property is either owned in fee and will revert back to the property owner after 5 years or is owned in fee permanently, or an agreement to subside or AEC owns the property at this point in time. These property owners are as follows:

PROPERTIES PURCHASED WITH 5 YEAR BUY BACK

ITEM 1. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 195 - 203, Belmont County Records: Tax Parcel No. **43-00468.000, 43-00467.000 and 43-00171.000** as previously owned by **James and Cynthia Kosmos, Map Parcel ID #10-64**

ITEM 2. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 164 - 179, Belmont County Records: Tax Parcel No. **43-00193.000 and 43-00196.000** as previously by **Captina Hunt Club, Map Parcel ID #10-65**

ITEM 3. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 204 - 207, Belmont County Records: Tax Parcel No. **43-00130.001 and 43-000134.000** as previously owned by **Anthony Cline, Map Parcel ID #10-67**

ITEM 4. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 221 - 224, Belmont County Records: Tax Parcel No. **43-00307.000 and 43-00308.000** as previously owned by **Gregory P. Morris, Map Parcel ID #10-66, 10-72**

ITEM 5. Mining subsidence rights to the following Parcels contained in Volume 250 of Deeds, Page 724 - 730, Belmont County Records: Tax Parcel No. **43-00194.003 and 43-00293.000** as previously owned by **John and Patricia Rosen, Map Parcel ID #10-62 & 10-87**

ITEM 6. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 159 - 163, Belmont County Records: Tax Parcel No. **43-00471.000 and 43-00472.000** as previously owned by **Sandra L. and Scott G. Moretz, Map Parcel ID #10-86, 10-89**

ITEM 7. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 180 - 182, Belmont County Records: Tax Parcel No. **43-00767.000** as previously owned by **Randy L. and Nancy L. Boan, Map Parcel ID #10-63**

(Subsidence Rights Language Excerpt):
"However, Seller expressly releases, remises, indemnifies against and discharges Buyer from any and all liability, claims, demands, damages, actions and causes of action, present or future, legal or equitable, of every kind, nature and description, arising from, or in any way related to: the mining operations of the Buyer and the subsidence damage to the Premises and all improvements, water supplies, structures and fixtures thereon;"

AMERICAN ENERGY CORP.
CENTURY MINE
PERMIT D-0425-16
ADDENDUM TO PART 1, C(7)

ITEM 8. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 208 - 214, Belmont County Records: Tax Parcel No. **43-00132.000, 43-00135.000, 43-00134.001, and 43-000121.000** as previously owned by **Matthew J. Thompson, Map Parcel ID #10-57**

(Subsidence Rights Language Excerpt):
"Seller acknowledges and agrees that upon the Reversion of the Premises, Seller shall accept the Premises from Buyer in its "AS IS", "WHERE IS" "WITH ALL FAULTS" condition, without any representations or warranties as to the condition of the Premises, except as otherwise set forth herein or in the Deed. Seller (for himself and his heirs, successors and assigns, and any party that may have a right to claim by, through or under Seller or any of the foregoing) shall, upon the Reversion of the Premises to Seller, fully and unconditionally RELEASE, ACQUIT AND DISCHARGE Buyer, together with its successors and assigns, from liability for any and all known and unknown claims, demands, actions, causes of action, liabilities, debts, liens, contracts, sums of money, compensation, promises, damages, costs, losses, deficiencies and expenses of any nature whatsoever, liquidated or unliquidated, fixed or contingent, foreseeable or unforeseeable, or suits at law or in equity of any kind, whether sounding in tort, contract or otherwise (all of the foregoing, collectively, "Claims"), including, without limitation, any Claims arising under or out of any federal, state or municipal law, statute, ordinance, code, rule, regulation or guideline of any kind, arising out of, or related in any manner, without limitation to, the Premises, including, without limitation, the environmental condition of the Premises or the mining operations of the Buyer and the subsidence damage to the Premises and all improvements, water supplies, structures and fixtures thereon..."

PROPERTIES PURCHSAED AND OWNED IN FEE WITH NO BUY BACK

ITEM 1. Mining subsidence rights to the following Parcels contained in Volume 248 of Deeds, Page 673 - 674, Belmont County Records: Tax Parcel No. **43-00389.000** as previously owned by **Harry L. Saffell, Map Parcel ID #10-73**

ITEM 2. Mining subsidence rights to the following Parcels contained in Volume 255 of Deeds, Page 849 - 851; Belmont County Records: Tax Parcel No. **43-00229.000** as previously owned by **Charlotte McCoy, Map Parcel ID #10-77**

ITEM 3. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 183 - 194, Belmont County Records: Tax Parcel No. **43-00326.000 and 43-00327.000,** as previously owned by **Stanley Passmore, Map Parcel ID #10-74**

ITEM 4. Mining subsidence rights to the following Parcels contained in Volume 225 of Deeds, Page 656-658; Belmont County Records: Tax Parcel No. **43-00130.000** as previously by **Ted Opat, Map Parcel ID #10-68**

AMERICAN ENERGY CORP.
CENTURY MINE
PERMIT D-0425-16
ADDENDUM TO PART 1, C(7)

PROPERTIES WITH PRE-MINE AGREEMENT FOR DAMAGES

ITEM 1. Mining subsidence rights to the following Parcels contained in Volume 245 of Deeds, Page 215 - 220, Belmont County Records: Tax Parcel No. **43-00131.001 and 43-00130.000** as previously owned by **Joseph J. and Barbara A. Petro, Map Parcel ID #10-71.**

(Subsidence Rights Language Excerpt):
"Releasor forever releases, remises, indemnifies against and discharges Releasee from any and all liability, claims, demands, damages, actions and causes of action, present or future, legal or equitable, of every kind, nature and description, arising from, or in any way related to the mining operations of the Releasee and the subsidence damage to the Property and all improvements, structures and fixtures thereon (the "Release"). It is understood that this Release shall inure to the benefit of Releasee and its successors, assigns, and that it shall bind Releasor and their heirs, legal representatives, assigns, and successors in interest to the Property."

LEASED PROPERTY RIGHTS

ITEM 1 Mining subsidence rights to the following Parcels contained in Volume 736 of Deeds, Page 835; Volume 767 of Deeds, Page 77; Belmont County Records: Parcel No. **43-00130.002, 43-00130.003, and 43-00131.000** as leased from **Paul and Martha Scott JR,, Map Parcel ID #10-69.**

ITEM 2 Mining subsidence rights to the following Parcels contained in Volume 242 of Deeds, Page 56; Belmont County Records: Parcel No. **43-00266.001** as leased from **Oklahoma Coal Company, Map Parcel ID #10-89**

ITEM 3 Mining subsidence rights to the following Parcels contained in Volume 242 of Deeds, Page 56; Belmont County Records: Parcel No. **43-00172.000, 43-00174.000 and 43-00175.000** as leased from **The Ohio Valley Coal Company, Map Parcel ID #10-88**

(Subsidence Rights Language Excerpt):
"Description of Rights. Lessee shall have the right to use the Leased Premises at its own risk for reasons related to the underground mining of the coal under the Leased Premises. The Leased Premises include, but are not limited to, the following rights: the right to conduct exploratory drilling, locate and plug active and abandoned oil and gas wells, repair damages, and ingress egress and regress to and from the Leased Premises and other properties adjacent to the Leased Premises, TOGETHER with the free, uninterrupted use and enjoyment of rights of way, into, upon and under the Leased Premises at such points and in such manner as may be considered proper and necessary in the sole discretion of the Lessee, from coal mining, draining and ventilating of the mines. The Lessor specifically leases all rights of lateral, adjacent and subjacent support for the Leased Premises, and waives all damages for the anticipated temporary loss of lateral, adjacent and subjacent support due to Lessee's mining operations. Lessee shall not be permitted to conduct surface mining on the Leased Premises, and will restore the Leased Premises to its present condition after completion of its underground mining operations."

Summary of Mining Rights

Natural Resource Partners (NRP)
to
American Energy Corporation (AEC)

ITEM 1. Mining rights to the following Parcels contained in Volume 111 of Deeds, Page 304-307, Belmont County Records: Deed No. 203, Tract No. **T3**

"All the so-called No. 8 Pittsburgh vein of coal known also as the six-foot vein with the right to enter, mine and carry away the same in underlying the following described premises. Together with the right to enter, mine and carry away coal by means of main entries passages and tunnels, and by the same means to transport coal mined from all other lands owned by the grantee his heirs and assigns."
"The grantor reserves the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same."

ITEM 2. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 416, Belmont County Records: Deed No. 187, Tract No. **T8**

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
With the right of passage through and under the above described lands by means of main entries passages and tunnels, for the purpose of transporting coal that may be mined from the lands of other parties." "Said grantors reserves the right to penetrate or drill through said coal in operating for oil, gas or other substances below said coal, not interfering with the mining thereof. Subject to all legal highways."

ITEM 3. Mining rights to the following Parcels contained in Volume 133 of Deeds, Page 317-319, Belmont County Records: Tract No. **T12,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve

the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 4. Mining rights to the following Parcels contained in Volume 136 of Deeds, Page 22; Volume 136 of Deeds, Page 24, Belmont County Records: Tract No. **T13,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 5. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 320; Volume 136 of Deeds, Page 335; Volume 136 of Deeds, Page 578, Belmont County Records: Tract No. **T14,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines,

such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 6. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 387; Belmont County Records: Tract No. **T15, T17**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 7. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 387; Volume 130 of Deeds, Page 393; Volume 130 of Deeds, Page 333, Belmont County Records: Tract No. **T16,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 8. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 393, Belmont County Records: Tract No. **T18**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 9. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 137, Belmont County Records: Deed Parcel No. **Tr.1-125A,**

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same. Said grantee, his heirs and assigns, agrees to pay in addition to the above consideration price a fair compensation and damages for such surface lands as said grantee his heirs and assigns may require and occupy for railroad tracts, side tracts, switches, turn-outs, trestles, tipples, coal chutes, buildings for machinery, fixtures and appliances, whenever said surface lands may be required for said purposes."
"Said grantors reserve, and said grantee his heirs and assigns agree to leave sufficient pillars of coal to support the surface of the bottom lands and under the buildings on said premises. Subject to all legal highways."

ITEM 10. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 138, Belmont County Records: Deed Parcel No. **127**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tract of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties. Said grantors reserve a block of coal underlying their brick residence of 0.25 acres."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same. Said grantee, his heirs and assigns, agrees to pay in addition to the above consideration price a fair compensation and damages for such surface lands as said grantee his heirs and assigns may require and occupy in his or their operations for mining coal, at the time when said surface privileges may be desired or required."
"Said grantors reserve, and said grantee his heirs and assigns agree to leave sufficient pillars of coal to support the surface of the bottom lands and under the buildings on said premises. Subject to all legal highways."

ITEM 11. Mining rights to the following Parcels contained in Volume 131 of Deeds, Page 115, Belmont County Records: Deed No. 277, Parcel No. **127-1**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tract of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas, the same to be done without unnecessary damage to the mining operation of said grantee. Said grantors also reserve the right to operate all other veins of coal under said premises, and all other minerals under the said six foot vein or No. 8 or Pittsburgh vein of coal, through said six foot vein or No. 8 or Pittsburgh vein, properly protecting the same in said operations. Subject to all legal highways."

ITEM 12. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 419, Belmont County Records: Deed Parcel No. **Tr.1-187A1, Tr.2-187A1, Tr.3-187A1, Tr.4-187A1, Tr.5-187A1**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other

parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same not interfering with the mining thereof. Subject to all legal highways."

ITEM 13. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 416, Belmont County Records: Deed Parcel No. **Tr.6-187A2, Tr. 7-187A2, Tr. 9-187A2, Tr.10-187A2, Tr.11-187A2**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same not interfering with the mining thereof. Subject to all legal highways."

ITEM 14. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 418, Belmont County Records: Deed Parcel No. **187B,**

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same not interfering with the mining thereof. Subject to all legal highways."

ITEM 15. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 425, Belmont County Records: Deed Parcel No. **187C**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same not interfering with the mining thereof. Subject to all legal highways."

ITEM 16. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 376, Belmont County Records: Deed Parcel No. **188**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same not interfering with the mining thereof. Subject to all legal highways."

ITEM 17. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 420, Belmont County Records: Deed Parcel No. **Tr.1-194, Tr.2-194**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below said coal. Said grantors do not hereby convey any surface privileges for mine openings. Subject to all legal highways."

ITEM 18. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 424, Belmont County Records: Deed Parcel No. **195**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tracts of land."
"With the right of passage through and under said land by means of main entries, passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to operate said premises for oil and gas including the right to penetrate said coal for said purposes. Said grantors reserve the coal underlying the residence and well as now located on said premises. Subject to all legal highways."

ITEM 19. Mining rights to the following Parcels contained in Volume 109 of Deeds, Page 424, Belmont County Records: Deed No. 115, Parcel No. **195-1**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same, under the following described tract of land."
"With the right of passage through and under said land by means of main entries,

passages or tunnels for transporting coal that may be mined from the lands of other parties."
"Said grantors reserve the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same." Said grantors reserve the coal under the buildings as now located on said above described lands. Subject to all legal highways."

ITEM 20. Mining rights to the following Parcels contained in Volume 111 of Deeds, Pages 304-307, Belmont County Records: Deed Parcel No. **Tr.1-203, Tr.2-203**:

"All the so-called Six-foot or No. 8 Pittsburgh vein of coal with the right to enter, mine and carry away the same in and underlying the following described premises."
"Together with the right to enter mine and carry away coal, by means of main entries, passages and tunnels, and by the same means to transport coal mined from all other lands owned by the grantee his heirs and assigns."
"The grantor reserves the right to penetrate or drill through said coal in operating for oil, gas or other substances below the same."

Addendum to Part 1, C(7)
Summary of Mining Rights
North American Coal Royalty Company
to
Consolidated Land Company
to
American Energy Corporation

ITEM 1. Mining rights to the following Parcels contained in Volume 136 of Deeds, Page 22; Volume 136 of Deeds, Page 24; Belmont County Records: Tract No. **T7,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 2. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 387; Belmont County Records: Tract No. **T9-1**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines,

such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine.

ITEM 3. Mining rights to the following Parcels contained in Volume 133 of Deeds, Page 317-319, Belmont County Records: Tract No. **T10,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine."

ITEM 4. Mining rights to the following Parcels contained in Volume 130 of Deeds, Page 317-319, Belmont County Records: Tract No. **T15,**

"All the coal within and underlying all that certain tract of land, situated in the Township of Washington Section Nine, Belmont County and State of Ohio; . . . Together with the free and uninterrupted right of way into, upon and under said coal and land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through and over said described premises other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired by said party of the second part. Said parties of the first part reserve the right to drill for oil and gas through the coal but not so as to interfere with any entry or opening that may have been made through said coal for the purpose of mining or removing same and in case any oil or gas well should be drilled through said coal or coal mines, such well shall be cased through the coal with iron or steel pipes, which shall be allowed to remain permanently to protect such coal or coal mine from being injured by either water or gas escaping into said coal or coal mine."

D. AREAS WHERE MINING IS PROHIBITED OR LIMITED

(1) Is this application area within an area designated unsuitable for coal mining operations or under study for designation in an administrative proceeding?

Yes ☐ No ☒

If "yes," did the applicant make substantial legal and financial commitments in this application area prior to January 4, 1977? Yes ☐ No ☐ If "yes," provide documentation supporting the assertion that the commitments were made prior to January 4, 1977.

N/A

E. PERMIT TERM AND RELATED INFORMATION

(1) Anticipated/actual date for:

(a) Starting mining operations **February 2011**

(b) Terminating mining operations **December 2020**

(2) Does the applicant propose a permit term in excess of five (5) years?

Yes ☐ No ☒ If "yes," submit an addendum with the information required by 1501:13-4-03(E)(3), Ohio Administrative Code.

(3) Horizontal extent of shadow area over life of permit in acres:

(a) Full Coal Recovery/Longwall Mining Acreage **875.7**

(b) Room and Pillar Acreage **451.6**

(c) Total Acres **1327.3** (Shadow Area)

F. PUBLIC NOTICE

(1) In the space below, provide the name and address of the public office where a complete copy of this permit application is to be filed.

Belmont County Courthouse
Recorder's Office
101 West Main Street
St. Clairsville, Ohio 43950

(2) In the space below, list the name and address of the newspaper and provide the text of the advertisement that is to be published in a newspaper of general circulation in the locality of this application area. Provide proof of publication.

The Times Leader
200 South 4th Street
Martins Ferry, Ohio 43935

Public Notice

American Energy Corporation, 43521 Mayhugh Hill Road, Beallsville, Ohio 43716, has submitted an underground Permit Application Number D-0425-16 to the Ohio Department of Natural Resources, Division of Mineral Resources Management. The application area is located in Belmont County, Ohio, Washington Township, T-5 R-4 in Sections 3, 4, 9, 10, and 15. The application contains 1331.3 underground acres and is located on the Armstrong Mills and Cameron 7 1/2 Minute USGS Quadrangle Maps, approximately 1 mile south of Armstrong Mills, Ohio. This coal mining application will remove coal using the underground mining methods, specifically the longwall mining method.

The application is on file at the Belmont County Courthouse, Recorder's Office, 101 West Main Street, St. Clairsville, Ohio 43950 for public viewing. Written comments or requests for an informal conference may be sent to the Division of Mineral Resources Management, 2050 E. Wheeling AVenue, Cambridge, Ohio 43725-2159 within thirty (30) days after the last date of publication of this notice.

PROOF OF PUBLICATION

The State of Ohio
County of Belmont, ss:

The undersigned, being sworn, says that he or she is an employee of Eastern Ohio Newspapers, Inc., A Corporation, publisher of the Times Leader a newspaper published in Martins Ferry, Belmont County, Ohio, each day of the week and of general circulation in said city and county; that it is a newspaper meeting the requirements of sections 7.12 and 5721.01 Ohio Revised Code as amended effective September 24, 1957; that affiant has custody of the records and files of said newspaper; and that the advertisement of which the annexed is a true copy, was published in said newspaper on each of the days in the month and year stated, as follows:

November 23, 30, December 7, 14 2010

Candace S Creswell

Subscribed by Affiant and sworn to before me, this 14th day of December, A.D. 2010.

Rebecca L. Anderson
Notary Public

NOTARIAL SEAL
STATE OF OHIO

REBECCA L. ANDERSON
Notary Public, State of Ohio
My Commission Expires Nov. 25, 2011

Printer's Fee $ 256.60
Notary's Fee $ _____

The Times Leader
Martins Ferry, Ohio

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TL Adv. 4 Tues. Nov. 23, 30, Dec. 7, 14

AEC 09373

PART 2: ENVIRONMENTAL RESOURCES INFORMATION

A. CULTURAL, HISTORIC, AND ARCHEOLOGICAL INFORMATION

(1) In order to address the nature of cultural, historic and archeological resources in planned subsidence operations, submit Archeology - Underground.

(2) Submit an addendum indicating the method to be used to identify historic properties on planned subsidence areas as mining progresses.

B. GEOLOGY DESCRIPTION

(1) Submit an addendum describing the geology within the proposed shadow and adjacent areas and down to and including the deeper of either the first stratum below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely affected by mining. The description shall also include information on the areal and structural geology of the shadow and adjacent areas and any other geologic parameters, which may influence the probable hydrologic consequences and protection of the hydrologic balance from material damage outside of the permit area, and which may influence the required reclamation.

(2) Submit an addendum describing how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially affected surface and ground waters.

(3) For those areas within the shadow area where the stratum above the coal seam to be mined will not be removed, submit Drilling Report - Underground. Submit approved test hole variance request, if applicable.

C. GROUND WATER INFORMATION

(1) Submit Ground Water Description that describes the ground water hydrology of the proposed shadow area and adjacent area. The Ground Water Description is to include information on each water-bearing stratum or zone, including the first water-bearing stratum below the coal to be mined.

(2) Are there any wells on the proposed shadow area and adjacent area? Yes ☒ No ☐ If "yes," submit Ground Water Inventory.

(3) Are there any developed springs on the shadow area and adjacent area? Yes ☒ No ☐ If "yes," submit Ground Water Inventory, and show location on the hydrology map. Also, show location of undeveloped springs on the hydrology map.

(4) Are there any public water supply sources on the proposed shadow area and adjacent area? Yes ☐ No ☒ If "yes," submit Ground Water Inventory, and show location on the hydrology map.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

ARCHEOLOGY – SUMMARY FORM
(Preliminary Historic Properties Identification)

ODNR Application No.: D-0425-16

Mine/Project Name: ONCO

Date: 12/13/10

1. **Applicant's Name:** American Energy Corporation

   Address: 43521 Mayhugh Hill Road

   City: Beallsville **State:** OH **Zip:** 43716

Type of Mining Application (mark all that apply):

__ Surface
X UG (room&pillar)
X UG (longwall)

2. **Contact Person:** James Turner Jr. **Phone:** (740)- 926-9152

3. **Location and Acreage Information**

   County: Belmont **Township:** Washington

   Section(s): 3,4, 9, 10 and 15 **Lot(s):**

   USGS Quadrangle: 1960 (PR 1972) Armstrong Mills

   Surface Acreage: 0
   Underground Acres: 1,331.3

4. **Archaeology Map Attached: (area described in 3 above is to be outlined on the map)**

   See Figures 1 and 5

5. **Archival Research:**

   Provide a narrative of the research performed including on-site reviews of the area and adjacent areas. Be sure to list all sources consulted: Ohio Historical Society, Ohio Historic Preservation Office (OHPO), landowners, Indian Tribes, local libraries, historical societies, or others.

   Records that were checked included the National Register of Historic Places (NRHP) files, the Mills Atlas, the Ohio Archaeological Inventory (OAI), the Ohio Historic Inventory (OHI), Cultural Resource Management (CRM) survey files, historic atlases and maps. The archival research covered the footprint of the application only as this is an underground application. No Adjacent Area considerations are considered.

   The NRHP files were checked and no historic properties were noted inside the application area.

   The Mills atlas was examined and no sites were noted inside the application area.

   The OAI USGS 1960 (PR 1972) Armstrong Mills 7.5 topographic map shows no previously recorded archaeological sites inside the application area.

   The OHI has no previously recorded structures inside the application area.

   The CRM files indicate that no previous surveys overlap the application area.

The 1888 historic atlas (Lathrop and Penny 1888) appears to show five houses in the application area (see Figure 2). Only three appear to be in the area that will be long wall mined.

The 1905 Clarington 15 minute topo map appears to show 10 houses in the application area (see Figure 2). Of these five or six appear to be in the area that will be long wall mined.

The 1960 (PR 1972) Armstrong Mills 7.5 topo map shows seven structure/farmstead locations within the application area (Figure 1). One of these structure locations appears to be modern. Some of the older roads and many of the structures shown on the older atlas/topo map are no longer shown. Only three of the structures are located in the long wall mined area.

6. Previous Disturbance:

_X present; ___absent within application area only (Note: previous disturbance is any type of natural or human made disturbance to the topsoil and subsoil in the application area prior to submittal. Examples include, but are not limited to, slides, severe erosion, previous mining activities, clear cut logging, recreational activities, etc., but not agricultural plowing and disking.)

If previous disturbance is present, list below and clearly delineate the extent of each type of disturbance on the archaeology map to be sent to the OHPO by the division. Attach addendum, if necessary.

Type of Disturbance	Date Occurred	Percent of Application	Map Symbol
Logging	Historic	Wooded areas	See Figure 4

7. Surface Conditions: (describe land use and percent of land in that use)

Agricultural: ___

Residential: 2%

Mining: ___

Pasture: 0%

Secondary Forest Growth: 98%

Has area been clear-cut logged? Yes **X**, No ___
If "yes," indicate approximate date(s) of logging. Historic logging, age unknown, was evid within wooded areas.

Other:

8. Provide a detailed narrative describing the site and adjacent areas including:

- **Topographic and Geographical description**
- **Previous land use, disturbances, and current uses and conditions**
- **Activities and surface affectment proposed by this project**
- **Justification of specific boundaries chosen including adjacent areas**
- **Analysis of effects to historic properties**
- **Alternatives that were considered**
- **Potential for direct or indirect effects by mining**

The proposed underground mining application involves both long wall mining shown in yellow on Figure 5 and partial recovery room and pillar mining shown in light red or orange. The application contains topography comprised of narrow ridges and valleys (Figure 1, 4 and 5; Plates 1-24). The application is mostly covered by woods. Historically the landscape has been associated with agricultural activities. Most of the farmland appears to have been abandoned over time. The only road extending through the area now is Goddard Road (Township Road 121).

As indicated there will be no surface affectment to the application area, consequently no subsurface testing was conducted. No subsidence will occur in the partial recovery (room and pillar) areas of the application (denoted light red or orange on Figure 5) consequently no cultural resource concerns are present for these areas unless surface affectment is planned at a later time. Long wall mining areas, denoted in yellow (Figure 5), can experience subsidence. Greg Williams (personal communication 2010) of Murray Energy Corp indicated that subsidence of the ground surface can be up to 3 to 4 feet. Structures that lie within the area of subsidence may undergo some cracking of the foundation and walls. It is this area that the archaeological and historical survey is focused upon in identifying whether there are standing structures that pre-date 1960. There are no Adjacent Area concerns as the mining will only effect the footprint of the application. The background search indicated no archaeological sites or recorded structures are located in the application area

The goal of the walk over was to confirm the presence or absence of pre-1960 structures within the denoted area of the long wall mining. Essentially those buildings shown on the 1888 atlas, 1905 and 1960 (PR 1972) topo maps were looked for inside the footprint of the long wall mining area. If buildings or structures were found still standing then recommendations would be made for the inventory and evaluation of these structures. If the buildings are ruins or had been razed then no architectural concerns would be warranted. The current application map, shown on Figure 5 shows that there are few structures present on the landscape with only seven shown along Goddard Road. All of these are modern cabins or sheds that appear hunting related (see Plates 15-20). None of the historic structures shown on the older atlases/topo are present on this road. Along the northern west to east extending ridge a historic house is shown on the 15 minute topo. This area was visually inspected but found to be graded (see Plate 14). Two buildings are shown on the 7.5 topographic map (Figure 1) farther to the southeast along the ridge and are listed as "ruins" on Figure 5. Visual inspection of this area found the ruins, which are composed of a collapsed barn, collapsed house (with two partially erect walls), a well, and a standing silo (Plates 2-6, 8). These all represent a former farmstead. The ruin lies on top of the ridge and is flanked by two trails. The house was a frame building with plank interior walls. The foundation and whether it once contained a basement could not be discerned due to debris. Approximately, 50ft south of the house is a clay tile topped well that is capped with a cement slab. Approximately 250ft north of the house ruin is the silo and collapsed barn. The barn, which measured roughly 30ft by 50ft, possessed a sandstone slab foundation, and appeared to have been used for livestock and storage. Sheet metal served as the roof cover. The silo, which is positioned adjacent to the collapsed barn, is a hollow clay tile type. The top of the silo is missing and it appears to have been connected to the east elevation of the barn at one time, with a covered framed walk-way, which is now gone. The silo measures 10ft in diameter and was estimated to be at a height of 21ft.

Since the hollow tile block silo was still standing and is pre-1960 in age it was recorded as BEL-1442-15. The structure, which is deteriorated, no longer has associated outbuildings or the

house of the former farmstead intact to provide context. There is no architectural significance associated with this type of silo, which is still fairly common in eastern Ohio. No historical significance was found associated with the former property owner of the site shown on the 1888 atlas. The silo is not considered eligible to the National Register. No further work is recommended. An OHI for the silo is attached to the form. The recommendation was made by Dr. Neal Hitch, an architectural historian, working for PAST (see resume in Appendix), in conjunction with Dr. Keener, who also has a background in recording and evaluating historic structures.

The remaining area to check for historic structures was along an unnamed intermittent in the southwestern corner area of the application that drains into Pea Vine Creek (Figure 5; Plates 9-11, 21-22). The 1888 atlas and 15 minute topo map shows several structures along the floor or edge of the intermittent and an old road. Three of the structures appeared to be inside the long wall mining area, while a fourth appeared to be just out or lie just south of the long wall mining boundary. The intermittent valley was visually inspected to see if any standing remains of these structures remained. No road exists anymore in the valley, just logging trails (see Plates 9 and 21). The area had been extensively disturbed by logging. The first structure shown in the application on the older topo map as potentially on the edge of the long wall mining is not present and the general area of the former structure disturbed (Plate 9). No foundations were noted. At the next structure location indicated to the north no standing structures were found but a sandstone foundation represented by one wall was noted along the floor of the intermittent (Plate 10). This was labeled Foundation #1 and shown on Figure 5. This foundation is simply a 50ft long section of one side of a former building (presumably a barn). The next two house locations contained no standing structures or foundation remains (Plates 11 and 22). The final house indicated along the valley to the north was outside the long wall mining area and consequently was not looked for.

9. Historic and Prehistoric Structures:

Definitions

A historic or prehistoric structure is a work made up of interdependent and interrelated parts in a definite pattern of organization. Constructed by humans, and 50 years or older, it is usually an engineering project.

Types

Historic structures include, but are not limited to dwellings, buildings, barns, farmstead outbuildings, bridges, culverts, churches, schools, halls, iron furnaces (and associated buildings), canals, forts, abandoned coal mine buildings, mine entrances, tipples and related structures, etc.

Prehistoric structures include, but are not limited to, earthworks, mounds, rock shelters, etc.

Provide information on all known historic and prehistoric structures below and locate each one on the archaeology map including corresponding labeled black and white, front and rear photographs of each structure. Attach addendum, if necessary.

Structure Type	Construction Date	Map Reference	Photo # Front	Photo # Rear
silo	Early 20th	BEL-1442-15 (Fig 5.)	See Plates 2, 5	

10. Previous Historic architectural surveys and/or Archeological Surveys: (describe any surveys known to exist on the application area or adjacent areas)

Application area: not applicable

Adjacent areas: not applicable

11. Historic Architectural or Archaeological Survey

- **Report Included**: no
- **Findings**:

__ Eligible Historic Properties exist in the application area

__ No Eligible Historic Properties exist in the application area

12. Determination of Affect (if historic properties exist in the area)

__ No Adverse Affect
Explain how you made this determination:

__ Adverse Affect
Explain your conclusion and how the affects will be avoided, reduced, or mitigated.

It is my recommendation based upon my archival research and/or field survey of this application that:

X **Additional archival research and field work is not recommended. There is a low probability that any eligible or listed national register properties exist within the area or the adjacent area of this application.**

Narrative of justification for this recommendation: Only one historic structure, BEL-1442-15 was found inside the fully recovery (subsidence area) portion of the application. The silo was recorded and evaluated and found ineligible to the NRHP. No further work is recommended on the structure.

Since no standing structures were noted at the various house locations inside the long wall mined portions of the application no further architectural work is recommended for the full recovery area. If full recovery were to occur in any future mining plans in the areas now indicated for partial recovery (room and pillar, Figure 5) then additional evaluation would have to occur at the house locations in these areas. Any planned surface affectment would also have to involve additional archaeological examination.

__ **Completion of a Phase 1 archaeological survey and/or architectural survey is recommended for areas described in the following narrative and shown on the attached archaeology map.**

Narrative of justification for selecting these sites and recommendation:

__ **Other:**

Narrative of justification for this recommendation:

To be completed by the professional archaeologist and/or historic architect.

Name: Craig S. Keener, Ph.D. (Professional Archaeological Services Team)

Firm or home address: 5180 US 42 South
Plain City, Ohio 43064

Telephone number: 614-733-0987

Email address: pasteam@earthlink.net

Printed Name: **Craig S. Keener**

Signature: _____ **Date:** **12/13/10**

Bibliography:

Lathrop, J. M. and H. C. Penny
1888 *Atlas of Belmont County, Ohio.* H.C. Mead Co., Philadelphia.

Mills, W. C.
1914 *An Archaeological Atlas of Ohio.* Ohio State Archaeological and Historical Society, Columbus.

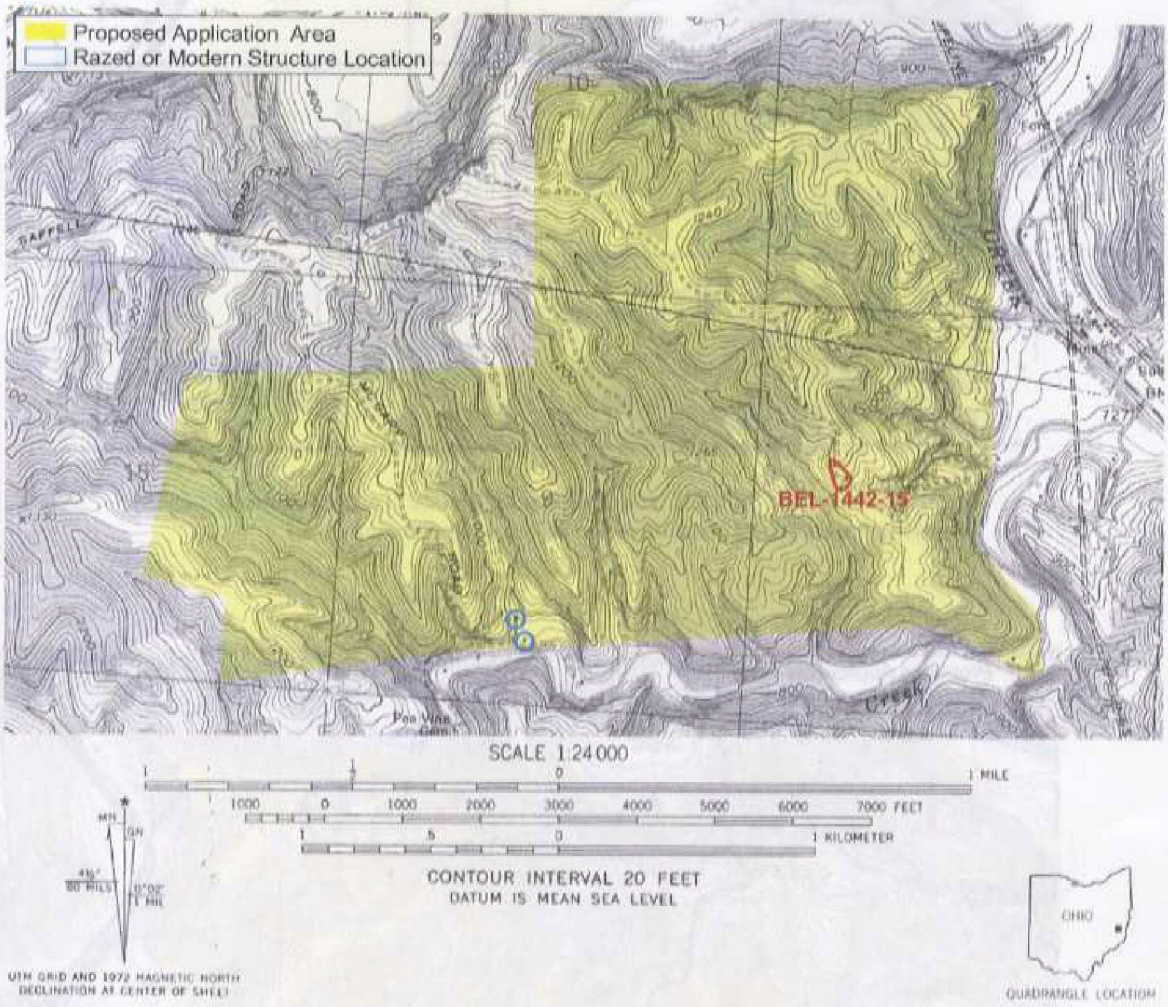


Figure 1. Portion of the USGS 1960 (Photorevised 1972) *Armstrong Mills Quadrangle, Ohio, 7.5 Minute Series (Topographic)* map showing location of the proposed application area, razed or modern structure locations, and pre-1960s structure BEL-1442-15.

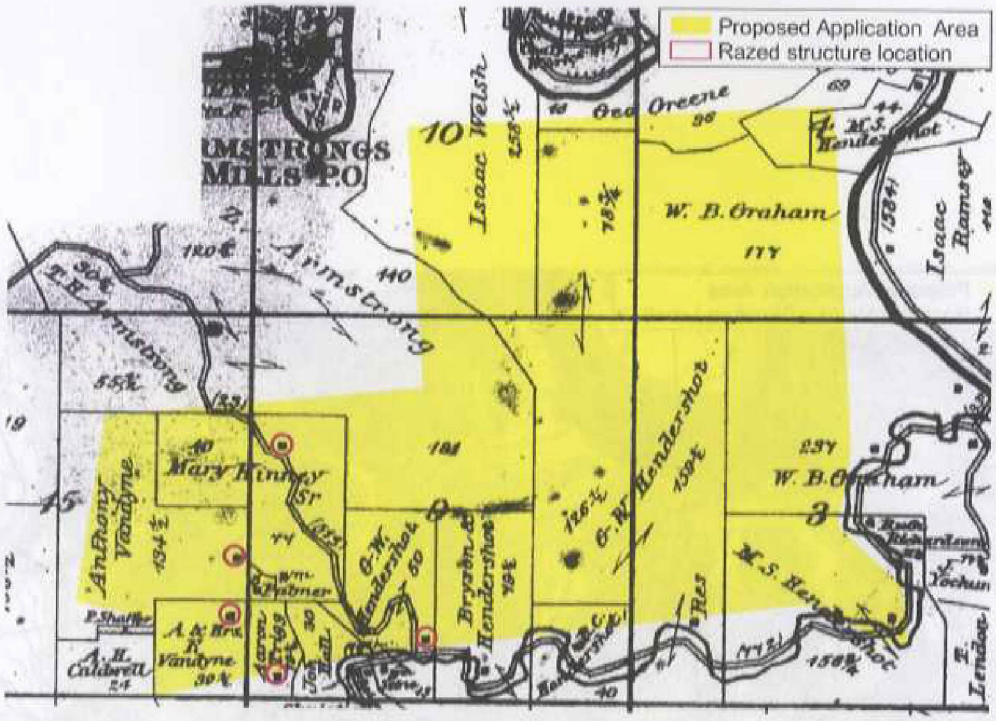


Figure 2. Portion of the 1888 *Atlas of Belmont County* (Lathrop & Penney 1888) showing the estimated location of the proposed application area.

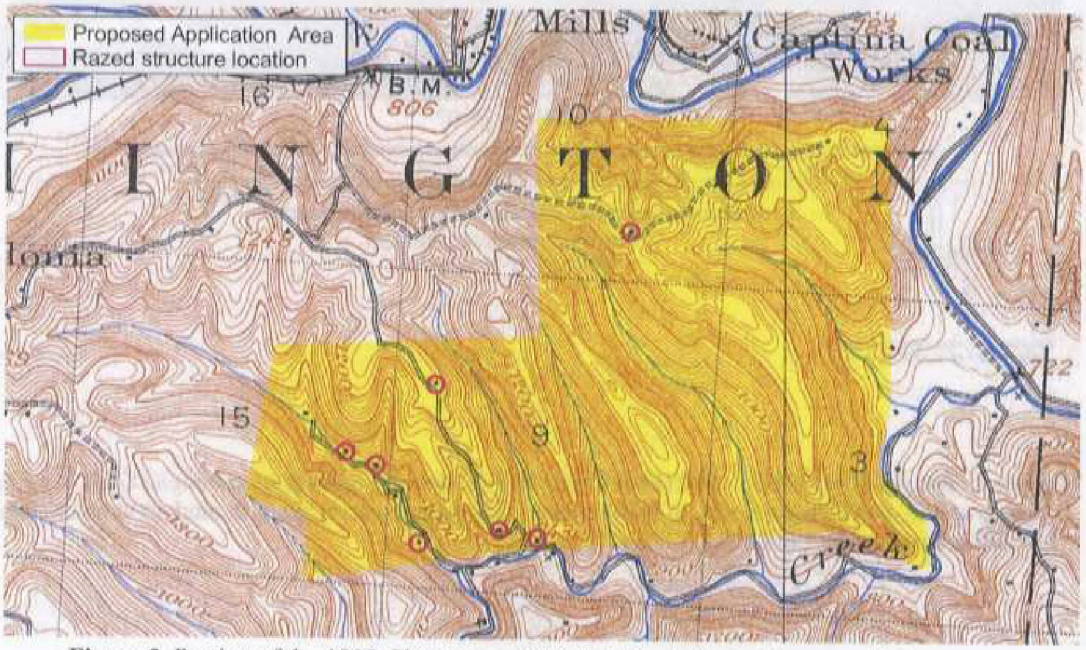


Figure 3. Portion of the 1905 *Clairington, Ohio 15 Minute Series (Topographic)* map showing the estimated location of the proposed application area.

AEC 09382

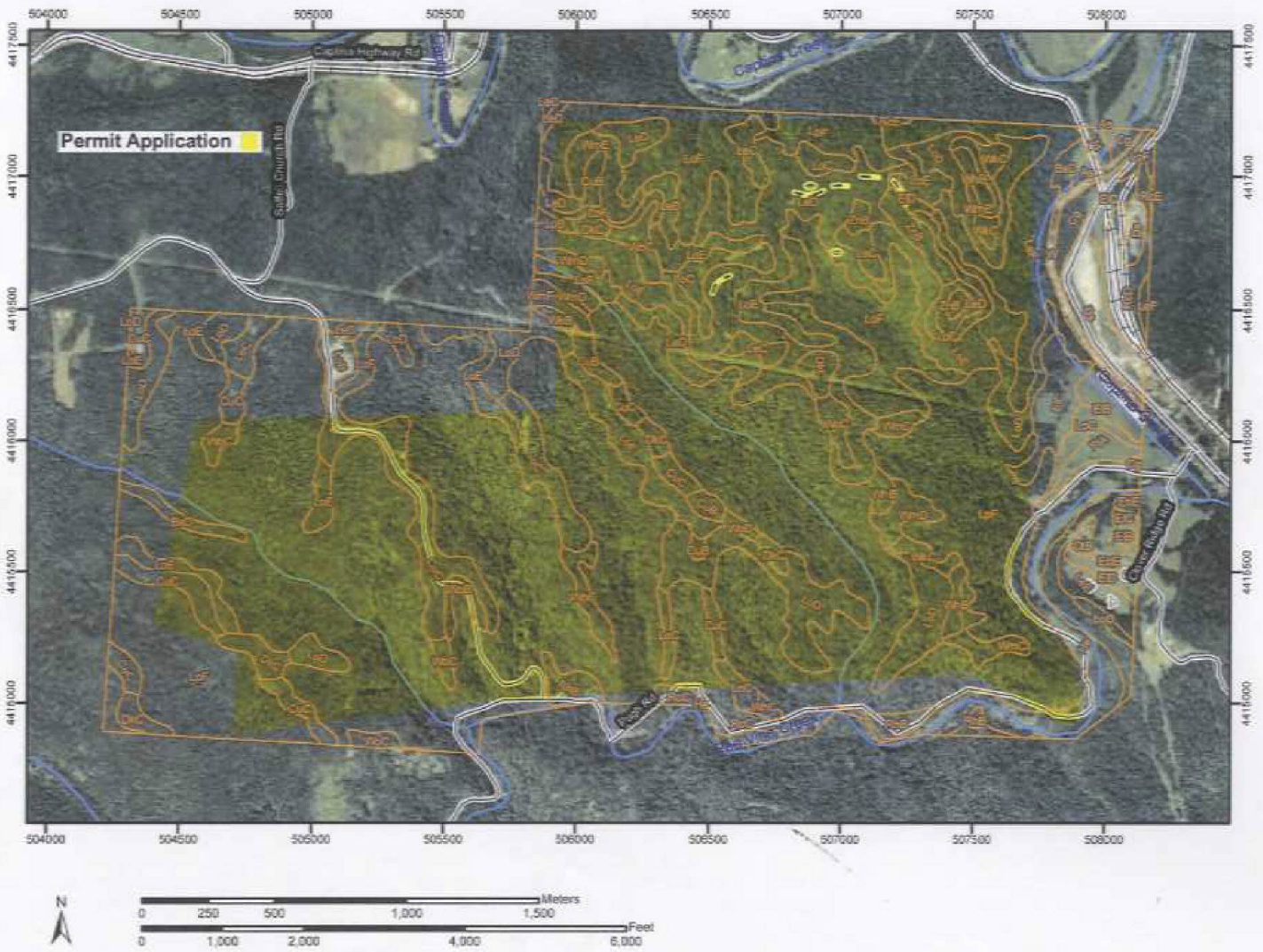


Figure 4. Aerial image of the application area indicating land surface conditions.

AEC 09383

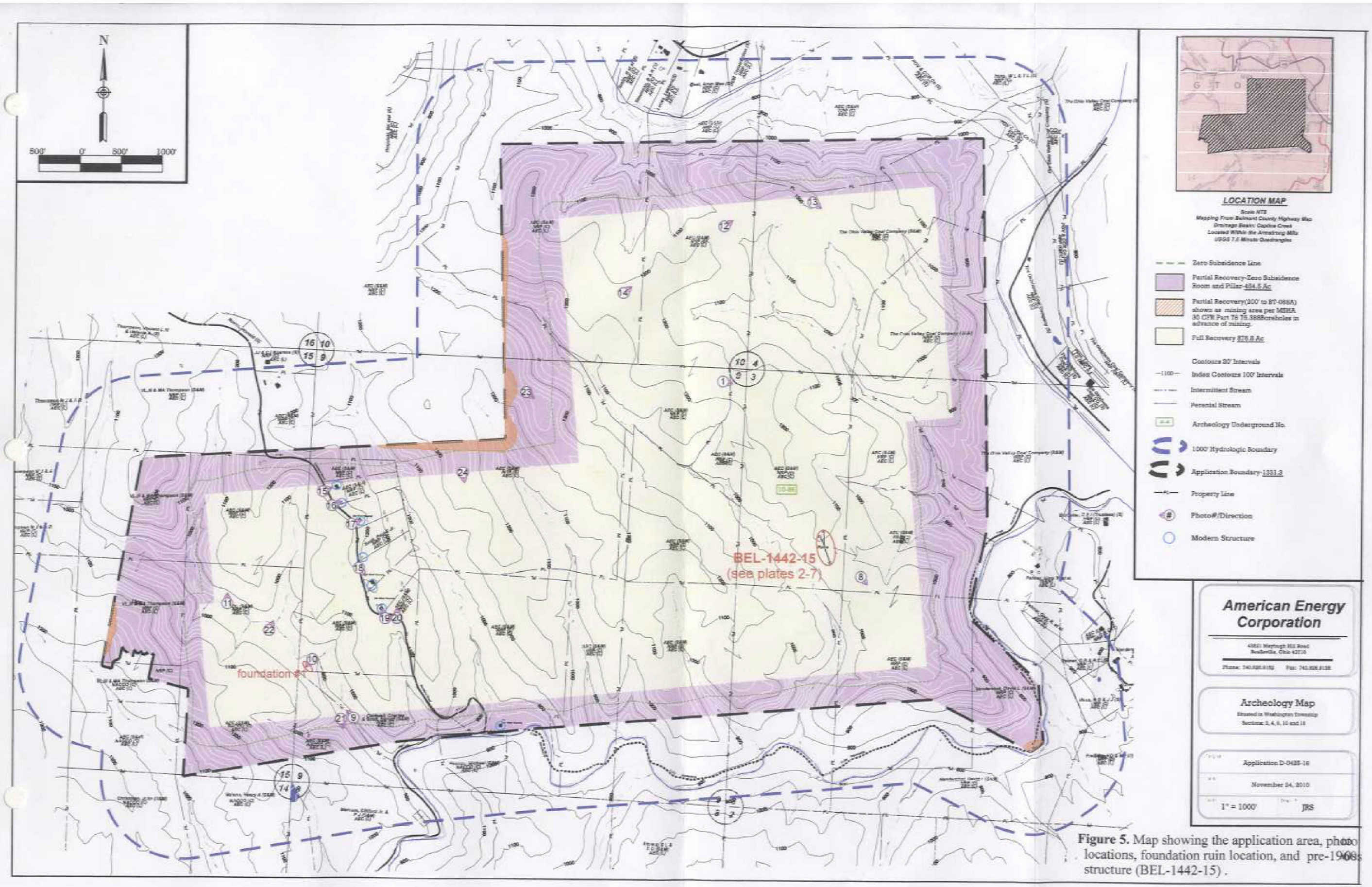


Figure 5. Map showing the application area, photo locations, foundation ruin location, and pre-1968 structure (BEL-1442-15) .

AEC 09384

Plate 1. View of application, facing east.

Plate 2. View of silo at BEL-1442-15, facing southeast.

Plate 3. View of barn ruin at BEL-1442-15, facing northeast.

Plate 4. View of barn ruin at BEL-1442-15, facing southwest.

Plate 5. View of silo and barn ruin at BEL-1442-15, facing northwest.

Plate 6. View of house ruin at BEL-1442-15, facing west.

Plate 7. View of landscape inside of application, facing south.

Plate 8. Interior view of barn ruin at BEL-1442-15.

Plate 9. View of former historic house location, facing west.

Plate 10. View of Foundation #1, facing west.

Plate 11. View of former historic house location, facing northeast.

Plate 12. View along saddle within the application, facing northeast.

Plate 13. View of application, facing southeast.

Plate 14. View of former historic house location, facing northeast.

Plate 15. View of structure along McGary Road, facing east.

Plate 16. View of structure along McGary Road, facing east.

Plate 17. View of structure along McGary Road, facing east.

Plate 18. View of structure along McGary Road, facing southeast.

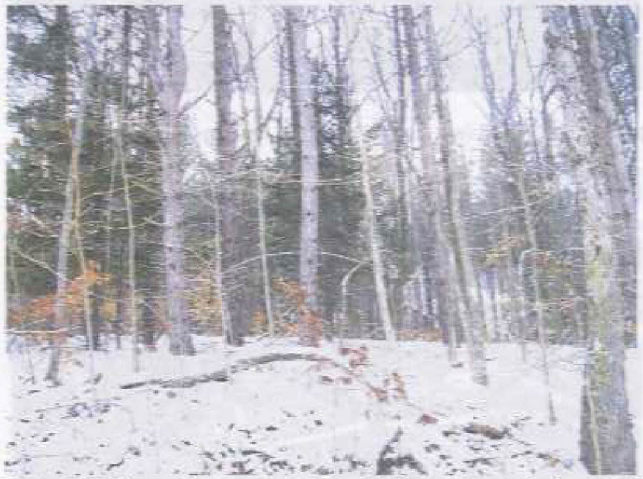


Plate 19. View of structure along McGary Road, facing north.

Plate 20. View of structure along McGary Road, facing north.

Plate 21. View of former historic house location, facing south.

Plate 22. View of former historic house location, facing north.

Plate 23. View of application, facing southeast.

Plate 24. View of application, facing south.

Appendix: Ohio Historic Inventory Form and Historic Architecture Vitae

OHIO HISTORIC INVENTORY

Ohio Historic Preservation Office
567 East Hudson Street
Columbus, Ohio 43211-1030
614/ 298-2000 Fax: 614/ 298-2037

OHIO HISTORICAL SOCIETY SINCE 1885

1. No.	2. County
BEL-1442-15	Belmont

Location of Negatives: P.A.S.T.
Roll No. Picture No.(s)

4. Present Name(s): Abandoned Silo ☐ Coded
5. Historic or Other Name(s):

6. Specific Address or Location
6a. Lot, Section or VMD Number: Section 3
7. City or Village: If Rural, Township & Vicinity: Washington Twp.
8. Site Plan with North Arrow

9. U.T.M. Reference
Quadrangle Name: Armstrong Mills
Zone: 17 Easting: 507130 Northing: 4415470
Site ☐ Structure ☒
Building ☐ Object ☐

11. On National Register?	Yes ☐ No ☒	12. N.R. Potential?	Yes ☐ No ☒
13. Part of Estab. Hist. Dist.?	Yes ☐ No ☒	14. District Potential?	Yes ☐ No ☒

15. Name of Established District (N.R. or Local)

16. Thematic Association(s)
17. Date(s) or Period: 1920-1960
17b. Alteration Date(s)
18. Style or Design: Vernacular ☐ High Style ☐ Elements
18a. Style of Addition or Element(s)
19. Architect or Engineer
19a. Design Sources
20. Contractor or Builder
21. Building Type or Plan: silo
22. Original Use, if apparent: farmstead
23. Present Use: abandoned/ruin
24. Ownership: Public ☐ Private ☐
25. Owner's Name & Address, if known
26. Property Acreage
27. Other Surveys in Which Included

28. No. of Stories
29. Basement? Yes ☐ No ☒
30. Foundation Material: hollow clay tile
31. Wall Construction
32. Roof Type & Material
33. No. of Bays: Front Side
34. Exterior Wall Material(s): hollow clay tile
35. Plan Shape: circular
36. Changes (Explain in #42): Addition ☐ Altered ☐ Moved ☐
37. Window Type(s): ☐ 6 over 6 ☐ 2 over 2 ☐ 4 over 4 ☐ Other
38. Building Dimensions: 10' diam.
39. Endangered? Yes ☒ No ☐
By What? abandoned
40. Chimney Placement: n/a
41. Distance from and Frontage on Road: 10'

42. Further Description of Important Interior and Exterior Features (Continue on reverse if necessary)

PHOTO

43. History and Significance (Continue on reverse if necessary)

PHOTO

44. Description of Environment and Outbuildings (See #52)

45. Sources of Information

46. Prepared by: Neal Hitch
47. Organization: P.A.S.T.
48. Date Recorded in Field: 12/6/2010
49. Revised by
50a. Date Revised
50b. Reviewed by

BEL-1442-15 | Belmont | Abandoned Silo | Section 3, Washington Twp.

AEC 09392

Neal V. Hitch

245 North Powell Avenue
Columbus, Ohio 43204
USA
nealhitch@aol.com

EDUCATION

THE OHIO STATE UNIVERSITY 9/96-9/05
Columbus, Ohio
Ph.D., American History

THE OHIO STATE UNIVERSITY 9/94-3/96
Columbus, Ohio
M.A., American History

THE OHIO STATE UNIVERSITY 9/93-12/95
Columbus, Ohio
M. Arch., Architecture

ARCHITECTURAL ASSOCIATION OF LONDON 3/94-7/94
London, England

THE OHIO STATE UNIVERSITY 1/89-6/93
Columbus, Ohio
B. S., Architecture, Magna Cum Laud with distinction in Architecture, minor in History.

ADDITIONAL EDUCATION

ATTINGHAM SUMMER SCHOOL 7/5/06-7/28/06
London, England
Attingham Trust for the Study of English Country Houses and Collections

POPLAR FOREST RESTORATION FIELD SCHOOL 6/95-7/95
Lynchburg, Virginia

PROFESSIONAL POSITIONS HELD

National Museum of the Turks and Caicos Islands 9/2007-9/2010
Director
Front Street
Grand Turk, Turks and Caicos Islands, British West Indies

Ohio Historical Society 2/2004-9/2007
Restoration and Planning Project Specialist, Facilities Management Division
Columbus, Ohio

Ohio Historical Society 5/97-2/2004
Associate Project Architect, Facilities Management Division
Columbus, Ohio

Hardlines: Design and Delineation 1/96 - 5/97
Cultural Resource Management Project Manager
Columbus, Ohio

Ohio Historical Society 11/89- 6/96
Volunteer Apprentice Cabinetmaker, Ohio Village
Full-time seasonal employee 10/94-12/94
Columbus, Ohio

CONCURRENT APPOINTMENTS
Editor, Astrolabe: Newsletter of the Turks and Caicos National Museum
Printed in the *Times of the Island,* distribution 38,000 quarterly copies

Capital University, 1/2004-6/2007
Lecturer, History Department
American History: Colonial to 1877
American History: 1877 to Present
Ohio History

Otterbein College, 1/2003-1/2004
Lecturer, History/Political Science Department
Issues in Western Civilization, History of Western Culture Pre-History to Present

The Ohio State University 1/2001-6/2001
Lecturer, Knowlton School of Architecture
Public History seminar on preparation of Historic Structures Reports

CERTIFICATIONS
PADI Open Water Scuba Certification
Certified Training in Section 106, Federal Projects and Historic Preservation Law, Advisory Council on Historic Preservation.
Certified Training in Computer Aided Design program, Microstation, AEC Cadcon, Columbus, Ohio.

HONORS & AWARDS
Letter of Commendation
Turks and Caicos Tourist Board, for "tourism product development." March 2010
Certificate of Commendation
For relief efforts following Hurricane Ike, 2008, United Humanitarians, 2009
Certificate of Commendation
Paul Laurence Dunbar House Restoration, American Association of State and Local History, 2005
Historic Preservation Commendation
Paul Laurence Dunbar House Restoration, Victorian Society in America, 2005
Anne de Fort-Menares Award for outstanding scholarship published in APT journal
Association for Preservation Technology International, 2002
Build Ohio Award, 1998
Ohio Village Church, given to Corna/Kokosing Construction Co.
Alpha Rho Chi Gold Medal for outstanding leadership in Architecture, 1996
Knowlton School of Architecture, The Ohio State University
Elliot Whitaker Traveling Fellowship in Europe 1993
Knowlton School of Architecture, The Ohio State University

ADDENDUM TO PART 2, ITEM B(1)
AMERICAN ENERGY CORPORATION
D-0425-16

GEOLOGY DESCRIPTION

The D-0425-16 area of the Century Mine is located in Belmont County in southeastern Ohio. The topography of the entire application area is typical of the Appalachian Plateau Province and is characterized by narrow rounded ridges and deep V-shaped valleys dissecting the terrain, which is underlain by essentially horizontal sedimentary rocks. Topographic relief with the D-0425-16 Application Area is approximately 530 feet. The lowest surface elevation within the application area is approximately 746 feet located near test hole AEC 2008-03 on the AEC property. The highest surface elevation within the application area is approximately 1276 feet located near test hole AEC 2010-18 in the northwest section of the permit. The maximum elevation of the Pittsburgh (No. 8) coalbed within the D-0425-16 proposed permit area is approximately 695 feet, mean sea level (msl) in the north east corner of the permit area. The lowest elevation of the Pittsburgh (No. 8) coalbed within the proposed shadow area of D-045-16 is approx. 638 feet, msl.

Stratigraphy of the proposed application area is formed by the Monongahela formation of the Pennsylvanian period, and the Dunkard Group of Permian time. The primary strata of both sections consist of an alternating sequence of limestone, sandstone, shale, claystone, and coal.

The Monongahela formation averages 250 feet in thickness within the proposed shadow area. In ascending order, it occupies the interval from the Pittsburgh #8 coal seam to the Waynesburg #11 coal seam. The primary rock units are limestone, shale, and claystone. Limestone forms 15 to 63% of this stratigraphic interval. As a result of longwall mining, the immediate strata overlying the Pittsburgh #8 coal seam will cave to a height of 3 to 6 times the mining height, depending on the bulking factor of roof strata. The beds above this caved zone are provided some support by the caved rock but may sag and give rise to bed separation and may be subject to fracturing to heights 24 to 54 times the mining height (120 to 270 feet above the mine).

The prevalent theory for strata behavior above mined longwall panels is that strata above the caved zone are provided some support by the caved rock but may sag and give rise to bed separation and may be subject to fracturing to heights 24 to 54 times the mining height. Independent of mining height, the interval variation of the zone of bed separation is inherently high, 125 percent {(54-24)/24}, to account for geologic uncertainties. The mining height for longwall panels projected in this Application is approximately 5.7 feet, the diameter of the shearing drum. At this height, the zone of bed separation is expected to range from 137 to 308 feet (rounded-up).

Coalbeds overlying the Pittsburgh (No. 8) coalbed in Application area D-0425-16, in ascending order, include the Redstone (No. 8A), Fishpot, Sewickley (No. 9), Uniontown (No. 10), Waynesburg No. 11) and Washington (No. 12) . The general interval from the Pittsburgh (No. 8) to these coalbeds is 30, 60, 90, 220, 250, and 350 feet, respectively.

Fractured strata resulting from longwall mining is expected to occur in two zones overlying the mine. These include the caving zone and zone of bed separation. The caving zone is expected to

cave 3 to 6 times the mining height. In D-0425-16, this is approximately 18 to 36 feet. Strata above the caved zone are given some support by the caved rock. These beds are believed to sag and give rise to bed separation and trough-shaped surface subsidence. The beds are subject to fracturing due to bending and stresses induced by mining for a distance of 30 to 58 times the mining height. The expected height of this zone is 180 to 348 in the study area.

Coalbeds impacted by the above cited zones include: (1) Redstone (No. 8A) - caved zone; (2) Fishpot, Sewickley (No. 9), Uniontown (No. 10) and Waynesburg No. 11) - zone of bed separation. The Washington (No. 12) coalbed lies above the bed of separation and is therefore expected to be unaffected.

Coal is recoverable by surface and deep mining methods. Surface mineable coals are unaffected by longwall mining since fracturing is not a factor. Deep mineable coals are affected. Coal in the caved zone is considered lost. Coal recovery in the zone of bed separation is speculative.

A valuation of coalbeds overlying the Pittsburgh (No. 8) coalbed was made by William J. Siplivy, P.E. from an exploratory core drilling program conducted in 1991. A total of eighteen holes were drilled in the general vicinity of Application area D-0425-16. These coalbeds were found to be thin and erratic in distribution, high in ash and low in BTU. None were determined to have economic value. The Waynesburg coal ranged from 6 to 26 inches; the Uniontown coal was 13 to 55 inches in 13 of the 18 holes; The Sewickley coal was 38 to 49 inches; the Fishpot was 4 inches, occurring in only one hole; and the Redstone was 17 inches, also occurring in only one hole. The Sewickley coal, although thicker than the others, contained shale partings. The projected quality of the 1.6 specific gravity float was 11 to 18 percent ash and 11,000 BTU when delivered at 7 percent moisture. The estimated recovery of the run-of-mine product from deep mining the Sewickley was estimated at 30 to 40 percent. Based on this, developing the Sewickley coalbed has no economic merit now or in the foreseeable future. AEC owns nearly all of the coal deposits cited in the Application area. and considers them of no economic value. They are too deep for surface mining, too thin and laterally discontinuous for deep mining, and are too poor in quality for current markets.

The Dunkard group is approximately 380 feet thick within the proposed shadow area, occupying the interval from the Waynesburg #11 coal seam to the ground surface. The primary rock units here are shale and claystone. These soft units form about 76 percent of this stratigraphic interval. This strata is primarily located within the constrained zone of disturbance resulting from longwall mining. The constrained zone is defined as that interval above 24 to 54 times the mining height and below 50 feet from the ground surface. This strata is expected to be sufficiently confined to prevent development of any fractures. Rock beds here will tend to absorb most of the strain energy without fracturing. Coal seams above the #8 will not be affected by the mining operation.

Strata close to the surface, however, are not sufficiently confined and may move in any direction. Surface cracks may be produced from tensile strains resulting from longwall mining. The depth of these cracks is generally estimated to be less than 50 feet.

The main safety against inflow of groundwater into the Century Mine is afforded by the constrained zone. The nature and thickness of the individual beds found here are of particular importance. Through extensive core drilling, multiple beds of claystone, with total thicknesses of 2 to 197 feet, have been identified. These claystone beds are relatively impermeable and generally capable of absorbing large amounts of strain energy before fracturing. It is the applicant's opinion that sufficient claystones are in-place to provide an adequate barrier against inflow from surface water and shallow groundwater disruptions caused by longwall mining. Where stream valleys are encountered, longwall operations are generally not planned under less than about 200 feet of cover to further protect the mine and overlying groundwater resources.

The rock strata of Belmont County typically form a gentle monocline that dips southeasterly at grades less than one percent. This dip trend generally represents the proposed application area with the base elevation of the #8 coal seam ranging from approximately 640 feet in the east to approximately 695 feet in the northeast corner. However, the dominant structural feature within the proposed shadow area is a *basin (doubly-plunging syncline).* The western end of the basin starts at test hole CLC-2002-30 and its long axis traverses northeastward through test holes AEC-2010-14 and AEC-2008-09, with the basin centered at this latter test hole. From there the long axis of the basin traverses southeastward through test holes AEC-2010-19 and AEC-2010-20. This is indicated on the Geological cross-section included in this application.

ADDENDUM TO PART 2, ITEM B(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

GEOLOGICAL IMPACT OF COAL REMOVAL UPON GROUNDWATER

The geological impact of coal removal is expected to vary from short term to long term. The Pittsburgh #8 coal seam will be mined, and in this area has dip of approximately 0.5% to the southeast, with the strike to the northeast. Groundwater occurs in this area in several disconnected saturated zones associated with the occurrence of the coal seams and underlying claystone units that prevent downward migration of the groundwater. Groundwater is generally limited to within 100 feet of the surface. Since primary porosity in the rock units is poor, nearly all of the ground water in this area of Ohio occurs as secondary porosity in the joints, cleats, fractures, and bedding planes of the rocks.

As longwall mining progresses, a caved area occurs immediately over the coal seam mined. Above this area, fractures occur in hard rocks and extend upward to about 200 feet above the coal seam. In the area above these fracture, a zone known as the continuous deformation zone develops where rocks bend down and form the classic subsidence basin. In the center of the basin, the rocks may be fractured and bedding planes may open as a result of this deformation. This process provides new openings to contain additional ground water, with a lowering of the phreatic surface of the water in the area. After mining, the aquifers are more connected and provide a larger source of water for well recharge.

The potential exists to re-drill existing wells or to drill new wells after mining. Groundwater still is available after subsidence. When subsidence occurs, the water level in some wells drops, sometimes to below the bottom of the well bore. Groundwater is not lost to the mine, but the water table is lowered in response to changes in rock permeability. The Century mine is a dry mine which indicates that the groundwater does not flow into the mine. Rather, layers of rock that act as aquatards, prevent downward migration of water into the mine. The other layers of rock, being more plastic than elastic, tend to fracture or the bedding planes separate and make more channels for the ground water to reside. Existing wells can be deepened or new ones drilled to encounter the new water table and to increase well bore reservoir storage to provide similar quantities of water after mining.

Overburden thickness above the Pittsburgh seam ranges from a low of approximately 100 feet in the southeast corner of the permit area at test hole CLC 2010-20 which is room and pillar mining only with no subsidence, to approximately 623 feet in the southwest corner of the proposed permit at test hole CLC 2002-30. While geologic structure can influence regional groundwater flow patterns, local variations in hydraulic properties of the rocks tend to accentuate localized flow systems.

In summary, the coal removal is expected to have an impact on the groundwater and surface water systems within the hydrology review area of the application. The impacts are described in Part 3 Item C.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2008-03

State Plane Coordinates: X: 2414548.31 Y: 693091.23 Surface Elevation: 746.49
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		9.00	
Limestone		0.50	ak, cs, es
Shale	*	11.80	cm, em
Coal, Fishpot		**1.30**	**ac, cv, ev**
Shale		1.60	cm, em
Limestone		18.50	ak, cs, es
Shale		0.60	cm, em
Sandstone		1.50	cs, es
Shale		6.40	cm, em
Limestone		2.40	ak, cs, es
Claystone		3.70	cv, ev
Coal, Redstone No. 8A		**1.65**	**ac, cv, ev**
Shale		2.40	cm, em
Limestone		7.80	ak, cs, es
Shale		10.95	cm, em
Coal, Pittsburgh No. 8 Roof Coal		**2.00**	**ac, cv, ev**
Shale		0.40	cm, em
Coal, Pittsburgh No. 8		**5.90**	**ac, cv, ev**
Shale		1.30	cm, em
Limestone		0.50	ak, cs, es
Shale		12.10	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	2.38	1.73	74.27	203.22	-129.00
Pittsburgh No. 8 Coal	5.40	3.44	169.00	4.02	165.00
Pittsburgh No. 8 Floor	2.10	1.87	65.45	102.15	-36.70

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2008-07

State Plane Coordinates: X: 2408890.87 Y: 690477.20 Surface Elevation: 848.86
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		7.00	
Limestone	*	7.70	ak, cs, es
Shale		13.30	cm, em
Limestone		2.60	ak, cs, es
Shale		14.30	cm, em
Limestone		14.70	ak, cs, es
Claystone		2.80	cv, ev
Limestone		12.10	ak, cs, es
Shale		6.60	cm, em
Limestone		5.00	ak, cs, es
Shale		5.90	cm, em
Coal, Sewickley No. 9		**2.40**	**ac, cv, ev**
Shale		1.70	cm, em
Limestone		5.70	ak, cs, es
Shale		1.50	cm, em
Sandstone		14.80	cs, es
Shale		4.00	cm, em
Coal, Fishpot		**2.00**	**ac, cv, ev**
Shale		0.90	cm, em
Limestone		21.20	ak, cs, es
Shale		8.20	cm, em
Limestone		4.00	ak, cs, es
Claystone		2.50	cv, ev
Coal, Redstone No. 8A		**1.00**	**ac, cv, ev**
Shale		2.00	cm, em
Limestone		16.10	ak, cs, es
Shale		5.50	cm, em
Coal, Pittsburgh No. 8 Roof Coal		**2.00**	**ac, cv, ev**
Shale		0.80	cm, em
Coal, Pittsburgh No. 8		**6.00**	**ac, cv, ev**
Shale		10.70	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	2.55	2.19	79.80	269.66	-189.64
Pittsburgh No. 8 Coal	4.74	2.11	148.00	8.14	140.00
Pittsburgh No. 8 Floor	2.74	2.41	85.40	264.50	-179.25

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2008-09

State Plane Coordinates: X: 2409077.60 Y: 694722.55 Surface Elevation: 1268.21
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		15.00	
Sandstone	*	2.20	cs, es
Shale	*	30.50	cm, em
Sandstone		5.50	cs, es
Shale		24.00	cm, em
Claystone		3.40	cv, ev
Shale		29.70	cm, em
Claystone		4.40	cv, ev
Shale		60.50	cm, em
Sandstone		7.00	cs, es
Shale		20.50	cm, em
Limestone		0.70	ak, cs, es
Shale		5.40	cm, em
Limestone		2.50	ak, cs, es
Shale		46.40	cm, em
Coal		**0.80**	**ac, cs, es**
Shale		3.10	cm, em
Sandstone		1.90	cs, es
Coal, Washington No. 12		**0.70**	**ac, cs, es**
Shale		21.50	cm, em
Sandstone		16.00	cs, es
Shale		11.60	cm, em
Coal, Waynesburg "A"		**1.40**	**ac, cs, es**
Shale		31.80	cm, em
Sandstone		5.90	cs, es
Shale		35.20	cm, em
Coal, Little Waynesburg		**0.50**	**ac, cs, es**
Shale		2.20	cm, em
Limestone		3.80	ak, cs, es
Shale		6.70	cm, em
Limestone		17.90	ak, cs, es
Shale		9.60	cm, em
Limestone		5.90	ak, cs, es
Shale		7.60	cm, em
Limestone		3.20	ak, cs, es
Shale		4.10	cm, em
Limestone		11.50	ak, cs, es
Shale		7.00	cm, em
Limestone		4.10	ak, cs, es
Shale		4.70	cm, em
Limestone		19.80	ak, cs, es
Shale		4.80	cm, em
Limestone		12.60	ak, cs, es
Shale		7.80	cm, em
Limestone		5.50	ak, cs, es
Shale		5.00	cm, em
Coal, Sewickley No. 9		**2.90**	**ac, cs, es**
Shale		5.10	cm, em
Limestone		1.00	ak, cs, es

AEC 09401

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2008-09

State Plane Coordinates: X: 2409077.60 Y: 694722.55 Surface Elevation: 1268.21
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Shale		19.30	cm, em
Coal, Fishpot		**0.70**	**ac, cs, es**
Shale		1.00	cm, em
Limestone		22.10	ak, cs, es
Shale		8.40	cm, em
Limestone		2.60	ak, cs, es
Shale		2.30	cm, em
Coal, Redstone No. 8Aa		**0.40**	**ac, cs, es**
Shale		3.40	cm, em
Limestone		12.20	ak, cs, es
Shale		4.10	cm, em
Claystone		4.50	cv, ev
Coal, Pittsburgh No. 8 Roof Coal		**0.60**	**ac, cs, es**
Shale		1.10	cm, em
Coal, Pittsburgh No. 8		**6.00**	**ac, cs, es**
Shale		15.00	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	1.89	1.62	58.98	27.65	31.29
Pittsburgh No. 8 Coal	3.68	1.71	115.00	4.90	110.00
Pittsburgh No. 8 Floor	1.96	1.84	61.10	181.95	-120.81

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-14

State Plane Coordinates: X: 2406917.13 Y: 639240.28 Surface Elevation: 1224.27
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		15.00	
Core Loss	*	57.80	
Shale		12.20	cm, em
Sandstone		2.30	cs,es
Shale		45.90	cm, em
Sandstone		7.70	cs,es
Shale		26.90	cm, em
Limestone		2.75	ak, cs, es
Shale		15.95	cm, em
Sandstone		2.65	cs,es
Shale		18.85	cm, em
Limestone		1.90	ak, cs, es
Shale		11.10	cm, em
Coal with Shale Partings, Washington No. 12		**1.45**	**ac, cv, ev**
Shale		8.75	cm, em
Sandstone		1.40	cs,es
Shale		7.75	cm, em
Sandstone		1.90	cs,es
Shale		21.75	cm, em
Limestone		1.70	ak, cs, es
Shale		2.40	cm, em
Coal with Shale Partings, Waynesburg "A"		**3.90**	**ac, cv, ev**
Shale		36.35	cm, em
Limestone		3.50	ak, cs, es
Shale		5.80	cm, em
Sandstone		3.30	cs,es
Shale		2.10	cm, em
Claystone		1.50	cv, ev
Sandstone		10.10	cs,es
Limestone		2.90	ak, cs, es
Shale		1.40	cm, em
Bone, Little Waynesburg		**0.40**	**ac, cv, ev**
Shale		3.00	cm, em
Sandstone		2.20	cs,es
Shale		15.65	cm, em
Limestone		2.30	ak, cs, es
Claystone		12.15	cv, ev
Shale		3.50	cm, em
Claystone		1.90	cv, ev
Shale		13.45	cm, em
Limestone		19.15	ak, cs, es
Claystone		3.70	cv, ev
Shale		4.00	cm, em
Limestone		5.20	ak, cs, es
Shale		3.60	cm, em
Limestone		2.20	ak, cs, es
Shale		2.70	cm, em
Limestone		18.35	ak, cs, es
Shale		2.50	cm, em

AEC 09403

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-14

State Plane Coordinates: X: 2406917.13 Y: 639240.28 Surface Elevation: 1224.27
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Limestone		17.00	ak, cs, es
Shale		2.30	cm, em
Limestone		2.75	ak, cs, es
Shale		7.80	cm, em
Boney Coal, Sewickley No 9		**3.60**	**ac, cv, ev**
Shale		6.80	cm, em
Sandstone		4.75	cs,es
Shale		10.75	cm, em
Boney Coal, Fishpot Coal		**1.65**	**ac, cv, ev**
Shale		1.85	cm, em
Limestone		18.20	ak, cs, es
Shale		11.35	cm, em
Limestone		4.30	ak, cs, es
Shale		1.60	cm, em
Coal with Shale Partings, Redstone 8A		**1.05**	**ac, cv, ev**
Shale		2.30	cm, em
Limestone		14.35	ak, cs, es
Shale		7.30	cm, em
Boney Coal, Pittsburgh No 8 Roof Coal		**0.65**	**ac, cv, ev**
Shale		1.10	cm, em
Coal, Pittsburgh No 8 Main Bench		**5.75**	**ac, cv, ev**
Shale		4.70	cm, em
Claystone		3.00	cv, ev
Shale		16.00	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	1.59	1.57	49.63	209.89	-160.17
Pittsburgh No. 8 Coal	4.39	2.48	137.00	9.03	128.00
Pittsburgh No. 8 Floor	3.00	2.90	93.60	193.42	-100.00

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-16

State Plane Coordinates: X: 2407306.50 Y: 691744.20 Surface Elevation: 1155.35
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		21.00	
Shale	*	2.00	cm, em
Claystone	*	2.30	cv, ev
Shale		67.70	cm, em
Claystone		2.00	cv, ev
Shale		2.30	cm, em
Limestone		3.30	ak, cs, es
Shale		16.10	cm, em
Sandstone		8.25	cs, es
Shale		17.45	cm, em
Limestone		1.95	ak, cs, es
Shale		11.80	cm, em
Boney Coal, Little Washington		**4.95**	**ac, cs, es**
Shale		6.20	cm, em
Bone		**0.70**	**ac, cs, es**
Shale		13.90	cm, em
Sandstone		2.30	cs, es
Shale		3.40	cm, em
Boney Coal, Waynesburg No A		**4.25**	**ac, cs, es**
Shale		5.10	cm, em
Limestone		2.20	ak, cs, es
Shale		43.65	cm, em
Sandstone		9.80	cs, es
Shale		10.95	cm, em
Limestone		4.50	ak, cs, es
Shale		33.65	cm, em
Claystone		2.20	cv, ev
Shale		13.80	cm, em
Limestone		11.55	ak, cs, es
Shale		3.30	cm, em
Limestone		2.70	ak, cs, es
Shale		7.10	cm, em
Limestone		4.80	ak, cs, es
Shale		3.60	cm, em
Limestone		2.20	ak, cs, es
Shale		2.60	cm, em
Limestone		15.25	ak, cs, es
Shale		4.10	cm, em
Limestone		29.80	ak, cs, es
Boney Coal, Sewickley No 9		**3.40**	**ac, cs, es**
Shale		4.35	cm, em
Sandstone		6.40	cs, es
Shale		13.75	cm, em
Coal with Shale Partings, Fishpot Coal		**1.75**	**ac, cs, es**
Limestone		22.65	ak, cs, es
Shale		8.35	cm, em
Limestone		4.50	ak, cs, es
Shale		1.50	cm, em
Boney Coal, Redstone 8A		**1.35**	**ac, cs, es**

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-16

State Plane Coordinates: X: 2407306.50 Y: 691744.20 Surface Elevation: 1155.35
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Limestone		13.65	ak, cs, es
Shale		3.65	cm, em
Claystone		2.40	cv, ev
Shale		2.55	cm, em
Boney Coal, Pittsburgh No 8 Roof Coal		**0.45**	**ac, cs, es**
Shale		0.85	cm, em
Coal, Pittsburgh No 8 Main Bench		**5.35**	**ac, cs, es**
Shale		6.50	cm, em
Claystone		2.00	cv, ev
Shale		14.80	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	3.41	3.33	106.62	140.60	-33.98
Pittsburgh No. 8 Coal	4.27	3.51	133.00	2.04	130.96
Pittsburgh No. 8 Floor	1.94	1.87	60.65	297.50	-236.85

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

AEC 09406

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-17

State Plane Coordinates: X: 2412000.99 Y: 694572.01 Surface Elevation: 1257.46
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		35.00	
Shale	*	5.65	cm, em
Core Loss		2.35	
Sandstone		2.85	cs, es
Claystone		2.60	cv, ev
Shale		24.40	cm, em
Sandstone		2.50	cs, es
Shale		6.55	cm, em
Claystone		4.60	cv, ev
Shale		4.60	cm, em
Sandstone		26.55	cs, es
Shale		7.50	cm, em
Limestone		2.30	ak, cs, es
Shale		23.50	cm, em
Sandstone		5.40	cs, es
Shale		28.95	cm, em
Limestone		2.70	ak, cs, es
Shale		36.10	cm, em
Claystone		5.30	cv, ev
Shale		5.20	cm, em
Boney Coal, Little Washington		**2.95**	**ac, cv, ev**
Shale		28.55	cm, em
Sandstone		9.70	cs, es
Shale		12.45	cm, em
Boney Coal, Waynesburg A		**1.40**	**ac, cv, ev**
Shale		3.75	cm, em
Sandstone		37.75	cs, es
Shale		6.95	cm, em
Limestone		5.15	ak, cs, es
Shale		4.95	cm, em
Coal with Shale Partings, Waynesburg No 11		**0.25**	**ac, cv, ev**
Shale		18.80	cm, em
Coal with Shale Partings, Little Waynesburg		**0.20**	**ac, cv, ev**
Limestone		5.65	ak, cs, es
Shale		22.70	cm, em
Limestone		2.20	ak, cs, es
Shale		22.35	cm, em
Limestone		19.35	ak, cs, es
Shale		6.80	cm, em
Limestone		4.80	ak, cs, es
Shale		3.80	cm, em
Limestone		38.00	ak, cs, es
Shale		7.45	cm, em
Limestone		6.30	ak, cs, es
Shale		3.60	cm, em
Boney Coal, Sewickley No 9		**3.90**	**ac, cv, ev**
Shale		7.65	cm, em
Sandstone		9.20	cs, es
Shale		8.30	cm, em

AEC 09407

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: The American Energy Corporation Drill Hole # AEC-2010-17

State Plane Coordinates: X: 2412000.99 Y: 694572.01 Surface Elevation: 1257.46
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Boney Coal, Fishpot Coal		**1.50**	**ac, cv, ev**
Limestone		23.05	ak, cs, es
Shale		7.80	cm, em
Limestone		2.25	ak, cs, es
Shale		3.40	cm, em
Boney Coal, Redstone 8A		**0.60**	**ac, cv, ev**
Shale		2.10	cm, em
Limestone		13.15	ak, cs, es
Shale		7.90	cm, em
Boney Coal, Pittsburgh No 8 Roof Coal		**1.20**	**ac, cv, ev**
Shale		0.70	cm, em
Coal, Pittsburgh No 8 Main Bench		**5.65**	**ac, cv, ev**
Shale		16.45	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	1.84	1.73	57.42	120.81	-63.39
Pittsburgh No. 8 Coal	4.18	2.67	131.00	3.58	127.42
Pittsburgh No. 8 Floor	2.00	1.92	62.50	223.00	-160.50

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-18

State Plane Coordinates: X: 2409248.18 Y: 696310.09 Surface Elevation: 1276.20
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		25.00	
Claystone	*	0.40	cv, ev
Shale	*	6.70	cm, em
Core Loss		1.35	
Shale	*	18.20	cm, em
Bone		**0.35**	**ac, cv, ev**
Shale		21.90	cm, em
Claystone		1.80	cv, ev
Shale		2.95	cm, em
Sandstone		2.00	cs, es
Shale		9.20	cm, em
Sandstone		3.30	cs, es
Shale		10.00	cm, em
Claystone		5.00	cv, ev
Shale		8.40	cm, em
Sandstone		3.60	cs, es
Shale		51.10	cm, em
Sandstone		5.55	cs, es
Shale		24.75	cm, em
Limestone		2.25	ak, cs, es
Shale		44.00	cm, em
Boney Coal, Washington No 12		**1.85**	**ac, cv, ev**
Sandstone		3.20	cs, es
Shale		2.50	cm, em
Coal		**0.50**	**ac, cv, ev**
Shale		12.30	cm, em
Limestone		1.80	ak, cs, es
Shale		16.50	cm, em
Sandstone		1.50	cs, es
Shale		6.45	cm, em
Sandstone		2.55	cs, es
Shale		7.45	cm, em
Coal, Little Washington		**1.80**	**ac, cv, ev**
Shale		2.15	cm, em
Sandstone		42.60	cs, es
Shale		11.50	cm, em
Coal with Shale Partings, Waynesburg "A"		**0.55**	**ac, cv, ev**
Shale		8.40	cm, em
Sandstone		3.00	cs, es
Shale		7.65	cm, em
Coal with Shale Partings, Waynesburg No 11		**0.30**	**ac, cv, ev**
Shale		2.30	cm, em
Limestone		4.15	ak, cs, es
Shale		5.60	cm, em
Limestone		3.25	ak, cs, es
Shale		23.65	cm, em
Limestone		2.10	ak, cs, es
Shale		6.35	cm, em
Limestone		2.65	ak, cs, es
Shale		3.80	cm, em
Limestone		17.25	ak, cs, es
Shale		6.60	cm, em
Limestone		5.30	ak, cs, es
Shale		3.65	cm, em
Limestone		2.55	ak, cs, es

OHIO DEPARTMENT OF NATURAL RESOURCES

AEC 09409

DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: The American Energy Corporation Drill Hole # AEC-2010-18

State Plane Coordinates: X: 2409248.18 Y: 696310.09 Surface Elevation: 1276.20
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Shale		2.35	cm, em
Limestone		6.60	ak, cs, es
Shale		2.70	cm, em
Limestone		21.90	ak, cs, es
Shale		7.35	cm, em
Limestone		7.05	ak, cs, es
Shale		4.60	cm, em
Boney Coal, Sewickely No 9		**2.75**	**ac, cv, ev**
Limestone		12.20	ak, cs, es
Shale		14.10	cm, em
Coal with Shale Partings, Fishpot Coal		**0.45**	**ac, cv, ev**
Shale		1.70	cm, em
Limestone		21.45	ak, cs, es
Shale		6.40	cm, em
Limestone		7.00	ak, cs, es
Shale		3.00	cm, em
Limestone		12.85	ak, cs, es
Shale		7.75	cm, em
Boney Coal, Pittsburgh No 8 Roof Coal		**0.75**	**ac, cv, ev**
Shale		1.10	cm, em
Coal, Pittsburgh No 8 Main Bench		**6.10**	**ac, cv, ev**
Shale		6.15	cm, em
Limestone		1.65	ak, cs, es
Shale		15.20	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	3.29	3.18	102.92	122.02	-19.09
Pittsburgh No. 8 Coal	4.33	1.80	135.00	4.07	131.00
Pittsburgh No. 8 Floor	2.67	2.66	83.30	203.00	-119.70

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-19

State Plane Coordinates: X: 2410366.70 Y: 693175.96 Surface Elevation: 1222.44
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		25.00	
Shale	Y	1.50	cm, em
Boney Coal		**0.20**	**ac, cv, ev**
Shale		9.30	cm, em
Sandstone		4.80	cs, es
Shale		2.30	cm, em
Claystone		2.10	cv, ev
Shale		12.00	cm, em
Claystone		4.25	cv, ev
Shale		6.95	cm, em
Sandstone		22.30	cs, es
Shale		16.80	cm, em
Claystone		2.75	cv, ev
Shale		51.30	cm, em
Limestone		3.75	ak, cs, es
Shale		7.30	cm, em
Sandstone		1.50	cs, es
Shale		19.50	cm, em
Limestone		2.10	ak, cs, es
Shale		2.10	cm, em
Limestone		2.20	ak, cs, es
Shale		11.30	cm, em
Bone, Washington No 12		**0.70**	**ac, cv, ev**
Shale		9.10	cm, em
Limestone		5.25	ak, cs, es
Shale		6.20	cm, em
Sandstone		19.15	cs, es
Shale		14.65	cm, em
Coal with Shale Partings, Little Washington		**0.80**	**ac, cv, ev**
Shale		30.15	cm, em
Sandstone		6.95	cs, es
Shale		18.20	cm, em
Boney Coal, Waynesburg "A"		**1.00**	**ac, cv, ev**
Shale		4.85	cm, em
Sandstone		4.00	cs, es
Shale		4.90	cm, em
Bone, Waynesburg No 11		**0.35**	**ac, cv, ev**
Limestone		5.90	ak, cs, es
Shale		6.25	cm, em
Limestone		10.90	ak, cs, es
Shale		5.95	cm, em
Limestone		2.10	ak, cs, es
Shale		8.45	cm, em
Limestone		5.00	ak, cs, es
Shale		10.30	cm, em
Limestone		16.80	ak, cs, es
Shale		7.25	cm, em
Limestone		4.70	ak, cs, es
Shale		3.30	cm, em
Limestone		22.80	ak, cs, es
Shale		2.00	cm, em
Limestone		12.80	ak, cs, es
Shale		7.15	cm, em
Limestone		5.35	ak, cs, es
Shale		5.85	cm, em

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-19

State Plane Coordinates: X: 2410366.70 Y: 693175.96 Surface Elevation: 1222.44
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Coal, Sewickley No 9		**2.85**	**ac, cv, ev**
Shale		3.30	cm, em
Limestone		9.35	ak, cs, es
Shale		10.20	cm, em
Boney Coal, Fishpot Coal		**1.75**	**ac, cv, ev**
Shale		1.60	cm, em
Limestone		22.15	ak, cs, es
Shale		8.90	cm, em
Limestone		3.30	ak, cs, es
Shale		6.30	cm, em
Limestone		16.65	ak, cs, es
Shale		4.20	cm, em
Coal, Pittsburgh No 8 Roof Coal		**1.50**	**ac, cv, ev**
Shale		1.35	cm, em
Coal, Pittsburgh No 8 Main Bench		**5.40**	**ac, cv, ev**
Shale		1.65	cm, em
Limestone		4.80	ak, cs, es
Claystone		1.25	cv, ev
Shale		8.80	cm, em

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	2.53	2.38	79.09	249.79	-170.70
Pittsburgh No. 8 Coal	4.63	2.14	145.00	9.01	135.99
Pittsburgh No. 8 Floor	2.44	2.43	76.25	336.50	-260.25

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

AEC 09412

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # AEC-2010-20

State Plane Coordinates: X: 2415178.63 Y: 690424.38 Surface Elevation: 757.85
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		15.00	
Coal, Sewickley No 9		**1.10**	**ac, cv, ev**
Claystone		2.90	cv, ev
Limestone		4.65	ak, cs, es
Claystone		4.50	cv, ev
Sandstone		2.55	cs, es
Claystone		4.20	cv, ev
Shale		7.50	cv, ev
Boney Coal, Fishpot Coal		**1.10**	**ac, cv, ev**
Limestone		13.25	ak, cs, es
Claystone		1.70	cv, ev
Limestone		3.80	ak, cs, es
Claystone		4.35	cv, ev
Shale		1.90	cm, em
Claystone		2.60	cv, ev
Limestone		4.10	ak, cs, es
Claystone		2.25	cm, em
Boney Coal, Redstone 8A		**1.00**	**ac, cv, ev**
Limestone		14.70	ak, cs, es
Shale		7.00	cm, em
Coal, Pittsburgh No 8 Roof Coal		**1.55**	**ac, cv, ev**
Shale		0.20	cm, em
Coal, Pittsburgh No 8 Main Bench		**5.30**	**ac, cv, ev**
Shale		2.00	cm, em
Claystone		2.50	cv, ev
Shale		13.00	cm, em

Submit the following informat
stratum below the coal seam.

757.85
100.15 O/B TOC#8 RC
657.70

Stratum	T	on 000	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof			-207.76
Pittsburgh No. 8 Coal			136.09
Pittsburgh No. 8 Floor			8.90

* Indicating waterbearing strat

Acid
Alkal
Com
Erodi

Revised 05/08
DNR-744-9023

AEC 09413

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # CLC-2002-30

State Plane Coordinates: X: 2404659.00 Y: 691256.00 Surface Elevation: 1260.00
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Casing		16.00	
Claystone	*	14.65	cv, ev
Shale	*	9.45	cm, em
Claystone		5.75	cv, ev
Shale		4.40	cm, em
Limestone		2.70	ak, cs, es
Shale		7.55	cm, em
Sandstone		4.85	cs, es
Shale		11.70	cm, em
Sandstone		2.35	cs, es
Shale		6.55	cm, em
Claystone		4.50	cv, ev
Shale		6.40	cm, em
Sandstone		20.05	cs, es
Claystone		14.00	cv, ev
Shale		7.25	cm, em
Claystone		15.00	cv, ev
Shale		12.95	cm, em
Claystone		15.80	cv, ev
Shale		3.10	cm, em
Limestone		3.10	ak, cs, es
Claystone		6.70	cv, ev
Shale		30.24	cm, em
Coal		**0.19**	**ac, cv, ev**
Shale		11.17	cm, em
Coal, Washington No. 12		**4.57**	**ac, cv, ev**
Shale		13.53	cm, em
Sandstone		3.10	cs, es
Shale		38.92	cm, em
Coal, Waynesburg "A"		**2.15**	**ac, cv, ev**
Shale		28.28	cm, em
Limestone		1.25	ak, cs, es
Shale		17.49	cm, em
Coal, Waynesburg No. 11		**0.41**	**ac, cv, ev**
Claystone		4.80	cv, ev
Sandstone		5.65	cs, es
Shale		9.27	cm, em
Coal, Little Waynesburg		**0.20**	**ac, cv, ev**
Limestone		5.83	ak, cs, es
Claystone		2.80	cv, ev
Limestone		5.20	ak, cs, es
Shale		5.45	cm, em
Limestone		7.40	ak, cs, es
Claystone		4.50	cv, ev
Shale		3.55	cm, em
Sandstone		2.10	cs, es
Claystone		3.90	cv, ev
Limestone		4.35	ak, cs, es
Shale		10.75	cm, em

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation Drill Hole # CLC-2002-30

State Plane Coordinates: X: 2404659.00 Y: 691256.00 Surface Elevation: 1260.00
(NAD 1983 Ohio South)

Lithology	H_2O*	Thickness	Physical Properties
Limestone		16.95	ak, cs, es
Shale		8.00	cm, em
Limestone		18.70	ak, cs, es
Shale		5.55	cm, em
Limestone		12.35	ak, cs, es
Shale		6.85	cm, em
Limestone		3.50	ak, cs, es
Shale		5.55	cm, em
Limestone		5.10	ak, cs, es
Shale		6.17	cm, em
Coal, Sewickley No. 9		**2.77**	**ac, cv, ev**
Shale		1.31	cm, em
Limestone		4.75	ak, cs, es
Shale		10.00	cm, em
Sandstone		1.60	cs, es
Shale		6.20	cm, em
Coal, Fishpot		**1.90**	**ac, cv, ev**
Shale		1.30	cm, em
Limestone		19.50	ak, cs, es
Shale		4.90	cm, em
Sandstone		2.05	cs, es
Shale		3.75	cm, em
Limestone		5.70	ak, cs, es
Claystone		2.81	cv, ev
Coal, Redstone No. 8A		**0.46**	**ac, cv, ev**
Shale		1.93	cm, em
Limestone		12.85	ak, cs, es
Claystone		10.51	cv, ev
Coal, Pittsburgh No. 8 Roof Coal		**0.32**	**ac, cv, ev**
Claystone		0.76	cv, ev
Coal, Pittsburgh No. 8		**5.41**	**ac, cv, ev**
Shale		4.35	cm, em
Claystone		6.70	cv, ev
Shale		2.10	cm, em
Sandstone		1.10	cs, es

Submit the following information for the stratum above the coal seam, the coal seam, and the stratum below the coal seam.

Stratum	Total Sulfur %	Pyrite Sulfur %	Potential Acidity Mg/l as CaCO3	Neutralization Potential (1000 Tons)	CaCO3 Deficiency (1000 Tons)
Pittsburgh No. 8 Roof	1.68	1.46	52.57	159.69	-107.25
Pittsburgh No. 8 Coal					
Pittsburgh No. 8 Floor	1.95	1.77	60.96	325.50	-264.50

* Indicating waterbearing stratum with an asterisk (*) under column labeled H_2O

AEC 09415

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCE MANAGEMENT

DRILLING REPORT - UNDERGROUND

Applicant's Name: American Energy Corporation — Drill Hole # CLC-2002-30

State Plane Coordinates: X: 2404659.00 Y: 691256.00 — Surface Elevation: 1260.00
(NAD 1983 Ohio South)

Physical Properties Key
Acid Producing: ac
Alkaline Producing: ak
Compactible: c (v-very, m-moderate, s-slight)
Erodible: e (v-very, m-moderate, s-slight)

(5) Submit required analyses on the Hydrologic Analyses for representative wells and developed springs. Based on the data on the Ground Water Inventory and Hydrologic Analyses, identify the seasonal variations of ground water quality and quantity.

(6) Submit Analysis of Existing Ground Water File Data from the Division of Water.

D. SURFACE WATER INFORMATION

(1) List the name of the watershed that will receive water discharges from the proposed shadow and adjacent areas as listed in the "Gazetteer of Ohio Streams" published by the Ohio Department of Natural Resources.

Captina Creek

(2) Are there any perennial or intermittent streams or other surface water bodies, including public water supply sources, on the proposed shadow area and adjacent area?

Yes ☒ No ☐ If "yes," submit Surface Water Inventory and Hydrologic Analyses.

(3) Based on the quality and quantity measurements listed on Surface Water Inventory and Hydrologic Analyses, and from other information available to the applicant and submitted with this application, identify the seasonal variations in water quality and quantity for the surface water sources on this application area and adjacent areas.

See Hydrologic Analyses

E. CLIMATOLOGICAL INFORMATION

If requested by the chief, subsequent to the filing of the permit application, provide the climatological information.

Williams, Greg

From: Burns, Ryan
Sent: Tuesday, January 18, 2011 11:28 AM
To: Williams, Greg
Subject: FW: Public Water Verification

Attachments: Murray_Energy_Request-01182011.PDF

Murray_Energy
equest-0118201

Ryan Burns
Murray Energy Corp.
-----Original Message-----
From: Craig Smith [mailto:Craig.Smith@epa.state.oh.us]
Sent: Tuesday, January 18, 2011 11:25 AM
To: Burns, Ryan
Subject: Re: Public Water Verification

Mr. Burns,

I have reviewed our files and have identified no public drinking water supply intakes, wells or related protection areas currently located within one mile of area you provided. The attached map is provided for your information.

Additional drinking water source protection areas may be determined in the future, as new drinking water sources are developed.

Feel free to contact me if you have any questions or need additional information.

Craig Smith
Ohio EPA
Division of Drinking and Ground Waters
Phone: (614) 644-2752
Fax: (614) 644-2909
craig.smith@epa.state.oh.us

>>> "Burns, Ryan" <rburns@coalsource.com> 1/18/2011 9:53 AM >>>
Mr. Smith,

I recently left you a voicemail in regards of the need for verification of Public Water Supplies. A hydrologist with the ODNR-DMRM wanted us to contact you for correspondence verifying that there are no public water supplies in an area being permitted for an underground mine. Our research and field work has not found any within the area located in southern Belmont County. A PDF of our application map is attached showing the location of the site. If you would need any further information or have any questions, please feel free to contact me at the information provided below. Thank you.

Sincerely,

Ryan W. Burns

Environmental Engineer

Public Water System Wells, Intakes and Drinking Water Source Protection Areas near the Proposed Murray Energy Project Area

Scale
0 1,000 2,000 4,000 Feet
0 0.25 0.5 1 Mile

EXPLANATION

- Public Water System Intake
- Public Water System Well
- *Approximate Area Covered in Application*

Drinking Water Source Protection Areas - Ground Water

- Protection Area (Outer line = 5-year time-of-travel)
- Inner Management Zone (Inner line = 1-year time-of-travel)

Drinking Water Source Protection Areas - Surface Water

- Corridor Management Zone
- Emergency Management Zone
- Zone of Critical Concern (Ohio River systems only)
- Critical Assessment Zone (Lake Erie systems only)
- Potential Influence Zone (Lake Erie systems only)

Label text reflects system type as defined in Chapter 3745-81-01 of the Ohio Administrative Code as noted below.

Community Water System | Non-Transient, Non-Community Water System | *Transient, Non-Community Water System*

Base Maps:
Armstrongs Mills 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey
Cameron 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters

Map created on January 18, 2011

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

GROUND WATER DESCRIPTION

Applicant's Name American Energy Corporation D-0425-16

Aquifer/Zone Identification	Aquifer/Zone Lithology	Aquifer/Zone Thickness	Aquifer/Zone Elev. (msl)	Aquifer/Zone Horizontal Extent	Aquifer/Zone Known Uses	Approximate Rate of Discharge of Aquifer/Zone (gpm or cps)
A	Shale, Limestone, Sandstone	150'	1250 - 1276	Uppermost Ridges, Outcrop to Outcrop	Domestic, Livestock	≤1 gpm
B	#12 Coal and Shale	60'	1028 - 1110	Ridge Base to Mid-Ridge	Domestic, Agricultural	Up to 18.8 gpm
C	#11 Coal, Shale, Sandstone	110'	918 - 1028	Regional to Ridge Base	Domestic Agricultural	Up to 6.25 gpm
D	#10 Coal, Shale, Limestone	50'	868 - 918	Regional to Ridge Base	Domestic, Agricultural	Unknown
E	#9 Coal, Shale, Limestone, S&G	110'	758 - 868	Regional, alluvial along PeaVine & Captina Creeks	Domestic, Agricultural	≤1.0 to 10 gpm
F	#8 Coal, Shale, Limestone	100'	638 - 758	Regional	None within Shadow Area	Unknown
G	Alluvial Sand & Gravel	60'	690 - 750	North Bank of Captina Creek	Possible Domestic	3-10 gpm
H	Alluvial sand & Gravel	25'	830 - 855	Flood Plain of Pea Vine	No Known Use	3-10 gpm

Part 2: Section C

AEC 09420

Revised 02/06
DNR-744-9025

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

GROUND WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Depth of Well Below Land Surface (feet)*	SWL of Well Below Land Surface (ft)*	Discharge for Spring, Under-ground Mine, etc. (gpm or cfs)*	Date Measured	Aquifer/ Water-bearing Zone ID*	Known Uses, including public water	Name of Owner
DS-87.00	X 2,414,736 Y 693,128	780'	--	--	--	10/07,12/07, 02/08	E	None	Ohio Valley Coal Co.
DW-73.00	X 2,441,212 Y 690,002	848'	17.0'	--	--	10/07,12/07, 03/08	E	None	American Energy Corp.
DW-76.00	X 2,439,227 Y 689,999	865'	11'	9.8'	--	09/07	H	None	C. Caldwell
DW-77.00	X 2,438,344 Y 690,455	940'	7'	--	--	10/07	C	None	American Energy Corp.
DW-83.00	X 2,446,768 Y 690,410	830'	15'	--	--	10/07	E	None	D. Hendershot
DW-86.00	X 2,444,357 Y 692,432	1040'	33'	32'	--	10/07	C	None	American Energy Corp.
WL-65.00	X 2,437,687 Y 694,685	1200'	87.5'	--	--	09/07	B	None	American Energy Corp.
W-65.01	X 2,437,555 Y 694,568	1250'	78'	--	--	09/07,12/07, 02/08	B	None	American Energy Corp.
W-68.00	X 2,438,310 Y 693,400	1220'	90'	--	--	09/07,12/07, 02/08	B	+ Domestic	American Energy Corp.

*NOTE: If well depth, static water level, or aquifer/water-bearing zone information is unobtainable, submit as an addendum to **GROUND WATER INVENTORY** a statement giving the reasons why the information is unobtainable. Do not include SWL and discharge values if they are reported on the Hydrologic Analyses.

Footnote: +Used supply likely to be impacted by mining induced subsidence, within 500' horizontal distance of subsidence zone.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

GROUND WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Depth of Well Below Land Surface (feet)*	SWL of Well Below Land Surface (ft)*	Discharge for Spring, Under-ground Mine, etc. (gpm or cfs)*	Date Measured	Aquifer/ Water-bearing Zone ID*	Known Uses, including public water	Name of Owner
WL303.084.001	X 2,415,359 Y 692,525	790'	--	--	--	2/11	Unknown	Unused	Palmer, Gary R.
WL303.084.002	X 2,416,428 Y 691,421	925'	90'	--	--	2/11	E	None	Palmer, GR & RC
WL303.082.001	X 2,416,429 Y 691,035	945'	--	--	--	2/11	Unknown	Unused	Maas, RG & JJ
WL310.002.000	X 2,410,545 Y 698,641	755'	--	--	--	12/10	Unknown	Domestic	Smith, R etal
WL310.093.000	X 2,410,798 Y 698,624	765'	--	--	--	12/10	Unknown	Domestic	Simonson, B&K
WL310.092.000	X 2,410,970 Y 698,601	765'	--	--	--	12/10	Unknown	Unused	Lucas, Leonard

*NOTE: If well depth, static water level, or aquifer/water-bearing zone information is unobtainable, submit as an addendum to **GROUND WATER INVENTORY** a statement giving the reasons why the information is unobtainable. Do not include SWL and discharge values if they are reported on the Hydrologic Analyses.

05/08
DNR-744-9083

Footnote: + Used supply likely to be impacted by mining induced subsidence, within 500' horizontal distance of subsidence zone.

AEC 09422

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	DS-87.00			DW-73.00		
2	Lab ID No.	0710033	0712005	0802301	0710158	0712104	0803423
3	Date Measured/Sampled	10-01-07	12-03-07	02-25-08	10-08-07	12-06-07	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-27-07	12-02-07	02-25-08	10-01-07	12-05-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	11.2'	7.5'	7.2'
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow-Dipped	No Flow-Dipped	2.50 gpm	--	--	--
8	pH (Standard Units)	7.96	7.95	7.74	7.00	7.3	7.39
9	Total Acidity (mg/l $CaCO_3$)	0.99	0.53	2.5	0.54	3.2	5.6
10	Total Alkalinity (mg/l $CaCO_3$)	250	220	340	280	250	250
11	Total Iron (mg/l)	0.04	0.05	0.01	0.17	0.14	1.7
12	Total Manganese (mg/l)	<0.002	<0.002	<0.002	0.020	0.003	0.069
13	Total Aluminum (mg/l)	<0.04	0.07	0.13	<0.04	0.12	1.0
14	Total Suspended Solids (mg/l)	<0.87	<0.87	<0.87	<0.87	<0.087	4.7
15	Total Hardness (mg/l as $CaCO_3$)	310	300	380	290	290	270
16	Total Sulfates (mg/l)	82	98	54	42	48	51
17	Specific Conductivity (umhos/cm at 25°C)**	660	670	700	690	630	650
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

*NOTE: If information required by item 6 is unobtainable, submit as an addendum to Hydrologic Analyses a statement giving the reasons why the information is unobtainable.

**NOTE: For each sample provide data for either item 17 or item 18.

05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	DW-76.00	DW-77.00	DW-83.00	DW-86.00	WL-65.00	WL303.0 84.002
2	Lab ID No.	--	--	--	--	--	1102081
3	Date Measured/Sampled	09-14-07	10-09-07	10-10-07	10-10-07	09-14-07	02-02-11
4	High (H), Low (L), Intermediate (I) (if applicable)	SUPPLEMENTAL					
5	Date Last Precipitation Event (if applicable)	09-12-07	10-01-07	09-27-07	09-27-07	09-12-07	02-02-11
6	Static Water Level of Well below Land Surface (feet)*	9.8'	--	--	32'	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	Unable to bail a sample	DRY	DRY	Unable to bail a sample	Unable to bail a sample	--
8	pH (Standard Units)		WELL IS PARTIALLY FILLED	WELL IS PARTIALLY FILLED			7.28
9	Total Acidity (mg/l $CaCO_3$)						55.0
10	Total Alkalinity (mg/l $CaCO_3$)						473
11	Total Iron (mg/l)						0.32
12	Total Manganese (mg/l)						0.052
13	Total Aluminum (mg/l)						0.08
14	Total Suspended Solids (mg/l)						ND
15	Total Hardness (mg/l as $CaCO_3$)						750
16	Total Sulfates (mg/l)						250
17	Specific Conductivity (umhos/cm at 25°C)**						1470
18	Total Dissolved Solids (mg/l)**	--	--	--	--		--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

*NOTE: If information required by item 6 is unobtainable, submit as an addendum to Hydrologic Analyses a statement giving the reasons why the information is unobtainable.

**NOTE: For each sample provide data for either item 17 or item 18.

05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	WL310.00 2.000	WL310.09 3.000				
2	Lab ID No.	1012636	1012637				
3	Date Measured/Sampled	12-22-10	12-22-10				
4	High (H), Low (L), Intermediate (I) (if applicable)	SUPPLEMENTAL					
5	Date Last Precipitation Event (if applicable)	12-22-10	12-22-10				
6	Static Water Level of Well below Land Surface (feet)*	24'M	30.5'M				
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	--	--				
8	pH (Standard Units)	8.96	8.31				
9	Total Acidity (mg/l $CaCO_3$)	ND	8.12				
10	Total Alkalinity (mg/l $CaCO_3$)	424	551				
11	Total Iron (mg/l)	ND	ND				
12	Total Manganese (mg/l)	ND	ND				
13	Total Aluminum (mg/l)	ND	0.22				
14	Total Suspended Solids (mg/l)	6	ND				
15	Total Hardness (mg/l as $CaCO_3$)	62	96				
16	Total Sulfates (mg/l)	31.5	87.3				
17	Specific Conductivity (umhos/cm at 25°C)**	1010	1450				
18	Total Dissolved Solids (mg/l)**	--	--				

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

*NOTE: If information required by item 6 is unobtainable, submit as an addendum to Hydrologic Analyses a statement giving the reasons why the information is unobtainable.

**NOTE: For each sample provide data for either item 17 or item 18.

05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	W-65.01			W-68.00		
2	Lab ID No.	0709204	0712107	0802192	0709199	0712106	0802191
3	Date Measured/Sampled	09-14-07	12-06-07	02-18-08	09-14-07	12-06-07	02-18-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-05-07	02-17-08	09-12-07	12-05-07	02-17-08
6	Static Water Level of Well below Land Surface (feet)*	42.5'	40.5'	41.0'	64.8'	64.0'	58.0'
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	--	--	--	--	--	--
8	pH (Standard Units)	7.95	7.6	7.66	7.22	7.3	7.22
9	Total Acidity (mg/l $CaCO_3$)	3.6	0.72	3.4	12	8.5	9.4
10	Total Alkalinity (mg/l $CaCO_3$)	150	180	230	270	260	280
11	Total Iron (mg/l)	1.9	1.7	0.47	0.08	<0.01	0.05
12	Total Manganese (mg/l)	0.120	0.970	0.190	<0.002	<0.02	0.004
13	Total Aluminum (mg/l)	0.67	2.6	0.58	0.21	<0.04	<0.04
14	Total Suspended Solids (mg/l)	5.3	5.9	<0.87	<0.87	<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	170	190	230	500	440	580
16	Total Sulfates (mg/l)	35	38	32	260	270	390
17	Specific Conductivity (umhos/cm at 25°C)**	370	410	530	1000	1000	1200
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

*NOTE: If information required by item 6 is unobtainable, submit as an addendum to Hydrologic Analyses a statement giving the reasons why the information is unobtainable.

**NOTE: For each sample provide data for either item 17 or item 18.

05/08
DNR-744-9024

Date: September 24, 2010

ANALYSIS OF EXISTING GROUND WATER FILE DATA

Prepared By: Kathy Sprowls, Hydrogeologist

Operator: American Energy Corp.

County: Belmont

Township: Washington

Section(s): 3, 4, 9, 10, 15

Number of water well logs within 1,000 foot radius of site (copies attached): 6 Field located: 1

General description of local hydrology:

Ground water in the area is generally obtained from the alternating layers of sandstone, shale, limestone and coal at depths ranging from 40 to 115 feet. Yields from these wells vary from 1 to 25 gallons per minute.

Areas of particular concern:

As there was no information supplied as to which coal seam and elevations were to be mined, it is assumed that the proposed mining activities could impact wells near the site. All wells should be located and monitored for any water quality and quantity changes.

WL310.093.000
812385

DNR 7802.94
TYPE OR USE PEN
SELF TRANSCRIBING
PRESS HARD

WELL LOG AND DRILLING REPORT

Ohio Department of Natural Resources
Divison of Water, 1939 Fountain Square Drive
Columbus, Ohio 43224 Phone (614) 265-6739

Permit Number 37

COUNTY Belmont TOWNSHIP Washington SECTION/LOT No. (Circle One) 10

OWNER/BUILDER (Circle One or Both) First Bert Last Simonson PROPERTY ADDRESS (Address of well location) Number Armstrong Street Mills, O. City 43904 Zip Code + 4

LOCATION OF PROPERTY At the Int of St Rt 148 & Twp Rd 119 on St Rt 148

CONSTRUCTION DETAILS

CASING (Length below grade) Borehole Diameter 16 in.
[1] Diameter 12 in. Length 27'8" ft. Wall Thickness .440 in.
[2] Diameter ____ in. Length ____ ft. Wall Thickness ____ in.
Type: [1] Steel [2] [1] Galv. [2] [X] PVC [2] [1] Other ____
Joints: [1] Threaded [2] [1] Welded [2] [X] Solvent [2] [1] Other ____
Liner: Length ____ Type ____ Wall Thickness ____ in.

SCREEN
Type (wire wrapped, louvered, etc.) ____ Material ____
Length ____ ft. Diameter ____ in.
Set between ____ ft. and ____ ft. Slot ____

GROUT
Material cement Volume used 125 gal.
Method of installation poured
Depth: placed from 25½ ft. to surface ft.

GRAVEL PACK (Filter Pack)
Material ____ Volume used ____
Method of installation ____
Depth: placed from ____ ft. to ____ ft.

Pitless Device ☐ Adapter ☐ Preassembled unit
Use of Well single family dwelling
☐ Rotary [X] Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other ____
Date of Completion 5-9-95

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand, etc.	From	To
Clay	0	12
Limestone	12	31
Gray Shale	31	38
Limestone	38	40
Water at 26'		

*(If additional space is needed to complete well log, use next consecutively numbered form.)

WELL TEST

☒ Bailing ☐ Pumping* ☐ Other ____
Test rate 1 gpm Duration of test ½ hrs.
Drawdown total ft.
Measured from: ☐ top of casing ☒ ground level ☐ Other ____
Static Level (depth to water) 13½ ft. Date: 5-9-95
Quality (clear, cloudy, taste, odor) cloudy

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

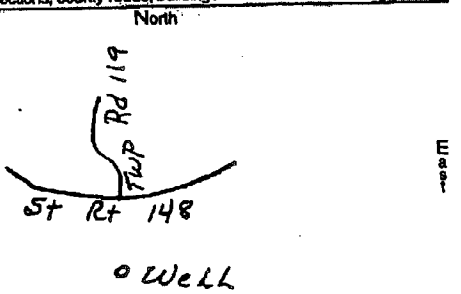
PUMP

Type of pump ____ Capacity ____ gpm
Pump set at ____ ft.
Pump installed by ____

WELL LOCATION

Location of well in State Plane coordinates, if available:
Zone ____ x ____ y ____
Elevation of well ____ ft./m. Datum plain: ☐ NAD27 ☐ NAD83
Source of coordinates: ☐ GPS ☐ Survey ☐ Other ____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Burkhead Drilling Co. Signed Carl R Burkhead
Address R D # 1 Box 51-B 5092 Date 6-5-95
City, State, Zip Rayland, Ohio 43943 ODH Registration Number 500

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

AEC 09428

WL310.002.000
812384

WELL LOG AND DRILLING REPORT

DNR 7802.94
TYPE OR USE PEN
SELF TRANSCRIBING
PRESS HARD

Ohio Department of Natural Resources
Divison of Water, 1939 Fountain Square Drive
Columbus, Ohio 43224 Phone (614) 285-6739

Permit Number 10

COUNTY Belmont TOWNSHIP Washington SECTION/LOT No. 10 (Circle One)

OWNER/BUILDER (Circle One or Both) First Robert Last Smith

PROPERTY ADDRESS (Address of well location) Number Armstrong Mills Street O. 43904 City

LOCATION OF PROPERTY .1 mi W of the Int of St Rt 148 & Twp Rd 119 on St Rt 148 Zip Code + 4

CONSTRUCTION DETAILS

CASING *(Length below grade) Borehole Diameter 16 in.
[1] Diameter 12 in. Length* 38½ ft. Wall Thickness .710 in.
[2] Diameter ____ in. Length* ____ ft. Wall Thickness ____ in.
Type: [1] [2] Steel [1] [2] Galv. [1] [2] PVC [1] [2] Other ____
Joints: [1] [2] Threaded [1] [2] Welded [1] [2] Solvent [1] [2] Other ____
Liner: Length ____ Type ____ Wall Thickness ____ in.
SCREEN
Type (wire wrapped, louvered, etc.) ____ Material ____
Length ____ ft. Diameter ____ in.
Set between ____ ft. and ____ ft. Slot ____

GROUT
Material cement Volume used 150 gal.
Method of installation poured
Depth: placed from 25 ft. to surface ft.

GRAVEL PACK (Filter Pack)
Material pea gravel Volume used 50 gal.
Method of installation poured
Depth: placed from 37 ft. to 25 ft.

Pitless Device [X] Adapter [ ] Preassembled unit
Use of Well single family dwelling
[ ] Rotary [X] Cable [ ] Augered [ ] Driven [ ] Dug [ ] Other ____
Date of Completion 5-4-95

WELL LOG*

INDICATE DEPTH(S) AT WHICH WATER IS ENCOUNTERED.

Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand, etc.	From	To
Clay	0	10
Coal	10	11
Limestone	11	30
Gray Shale	30	37
Limestone	37	63
Gray Shale	63	73
Coal	73	79
Gray Shale	79	88
~~Water at 26'~~		
Plugged to 70 ft.		

*(If additional space is needed to complete well log, use next consecutively numbered form.)

WELL TEST

[X] Bailing [ ] Pumping* [ ] Other ____
Test rate 1 gpm Duration of test 1 hrs.
Drawdown total ft.
Measured from: [ ] top of casing [X] ground level [ ] Other ____
Static Level (depth to water) 14½ ft. Date: 5-4-95
Quality (clear, cloudy, taste, odor) cloudy

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

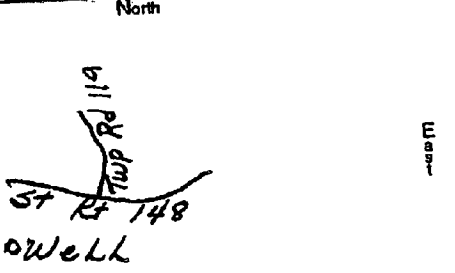
PUMP

Type of pump ____ Capacity ____ gpm
Pump set at ____ ft.
Pump Installed by ____

WELL LOCATION

Location of well in State Plane coordinates, if available:
Zone ____ x ____ y ____
Elevation of well ____ ft./m. Datum plan: [ ] NAD27 [ ] NAD83
Source of coordinates: [ ] GPS [ ] Survey [ ] Other ____

Sketch a map showing distance well lies from numbered state highways, street intersections, county roads, buildings or other notable landmarks.



I hereby certify the information given is accurate and correct to the best of my knowledge.

Drilling Firm Burkhead Drilling Co. 5092
Address R D # 1 Box 51-B
City, State, Zip Rayland, Ohio 43943

Signed Carl R Burkhead
Date 6-5-95
OOH Registration Number 500

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

AEC 09429

WELL LOG AND DRILLING REPORT

NO CARBON PAPER NECESSARY - SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

631597
WL-65.00

COUNTY Belmont TOWNSHIP Washington SECTION OF TOWNSHIP _____

OWNER J. D Gardner ADDRESS TWP. 121

LOCATION OF PROPERTY 55990 Goddard Rd. Jacobsburg, Oh 43942

CONSTRUCTION DETAILS

Casing diameter 8 in Length of casing 37 Ft.

Type of screen _____ Length of screen _____

Type of pump _____

Capacity of pump _____

Depth of pump setting _____

Date of completion _____

BAILING OR PUMPING TEST
(specify one by circling)

Test rate _____ gpm Duration of test _____ hrs

Drawdown _____ ft Date _____

Static level (depth to water) _____ ft

Quality (clear, cloudy, taste, odor) _____

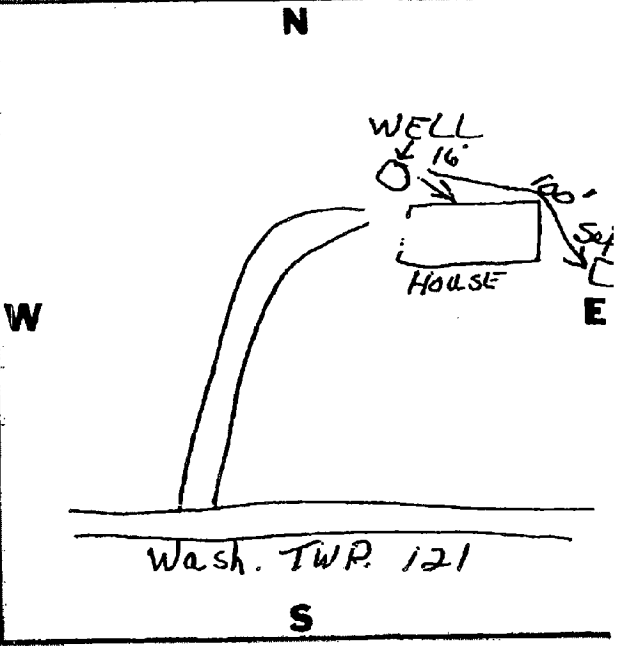
Pump installed by _____

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
Top Soil	0 ft	5 ft
Sandstone	5'	23'
Rock	23'	26'
Clay	26'	41'
Rock	41'	43'
Clay	43'	90'
Bottom of well		
Limestone		
Hit water at 50' level		

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



DRILLING FIRM Beckett & Son Well Drilling DATE Oct. 15, 2001

ADDRESS 54230 Stern Rd. Powhatan Pt. Oh 43942 SIGNED Ronald Beckett

*If additional space is needed to complete well log, use next consecutively numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

AEC 09430

WL 303.08.002

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER NECESSARY— SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646
Columbus, Ohio 43215

No. 402976

County BELMONT Township WASHINGTON Section of Township

Owner WILLIAM DALMES Address JACOBSBURG OHIO

Location of property CLOVER RIDGE RD ½ MILE SOUTH OF 148

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 57'

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion 5-31-74

BAILING OR PUMPING TEST
(Specify one by circling)

Test Rate 2 G.P.M. Duration of test hrs.

Drawdown ft. Date

Static level-depth to water ft.

Quality (clear, cloudy, taste, odor)

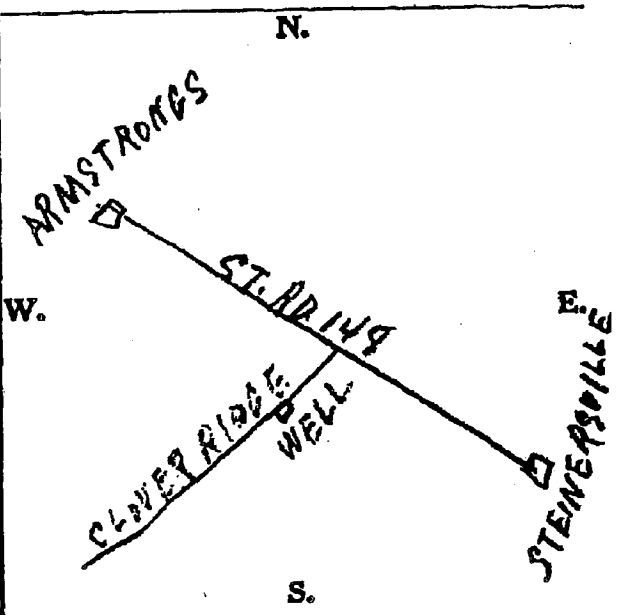
Pump installed by

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
CLAY	0 Feet	6 Ft.
LIMESTONE	52	60
GREY SHALE	60	65
SANDSTONE	65	70
SHALE	70	90
WATER AT 60		

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Drilling Firm KRIECHBAUM Date 6-1-74

Address JACOBSBURG OHIO Signed Lawrence Kriechbaum

*If additional space is needed to complete well log, use next consecutive numbered form. (39)

AEC 09431

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
D-1	X 2,415,630 Y 693,385	720'		09/07, 12/07, 03/08	None	Pea Vine Creek, Perennial	See Map
D-2	X 2,415,553 Y 694,586	720'		09/07, 12/07, 03/08	None	Captina Creek, Perennial	See Map
D-10	X 2,407,497 Y 690,121	870'	--	09/07,12/07,03/08	None	Perennial	See Map
D-10A	X 2,403,807 Y 693,176	995'	--	10/07,12/07,03/08	None	Intermittent	See Map
D-10B	X 2,436,557 Y 692,585	950'	--	10/07,12/07,03/08	None	Intermittent	See Map
D-10C	X 2,406,169 Y 691,782	930'	--	10/07,12/07,03/08	None	Intermittent	See Map
D-10D	X 2,407,024 Y 690,624	880'	--	10/07,12/07,03/08	None	Intermittent	See Map
D-10-10E	X 2,405,804 Y 691,690	940'	--	10/07, 12/07,03/08	None	Intermittent	See Map
D-10-10F	X 2,405,329 Y 691,978	950'	--	10/07, 12/07, 03/08	None	Intermittent	See Map
D-10I	X 2,406,740 Y 691,355	920'	--	10/07, 01/08, 03/08	None	Intermittent	See Map

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

05/08
DNR 744 9084

AEC 09432

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
D-11	X 2,408,779 Y 690,549	855	--	09/07,12/07, 03/08	None	Intermittent	See Map
D-12	X 2,412,544 Y 690,323	790'	--	10/07, 01/08, 03/08	None	Perennial	See Map
D-13	X 2,414,862 Y 692,803	730'	--	10/07, 12/07, 03/08	None	Perennial	See Map
D-13A	X 2,414,209 Y 693,046	760'	--	10/07,12/07, 02/08	None	Intermittent	See Map
D-13B	X 2,414,141 Y 693,373	770'	--	10/07,12/07, 02/08	None	Intermittent	See Map
D-13C	X 2,413,029 Y 695,180	930'	--	10/07,01/08, 03/08	None	Intermittent	See Map
D-14	X 2,410,241 Y 698,056	755'	--	10/07, 01/08, 03/08	None	Intermittent	See Map
D-25	X 2,408,021 Y 690,524	890'	--	10/07, 12/07, 03/08	None	Intermittent	See Map
D-26	X 2,410,522 Y 697,817	750'	--	10/07, 01/08,03/08	None	Intermittent	See Map
D-27	X 2,412,246 Y 698,118	820'	--	10/07, 01/08, 03/08	None	Intermittent	See Map

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

05/08
DNR-744-9084

AEC 09433

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
D-28	**X 2,412,776 Y 698,090**	**810'**	**--**	**09/07, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
D-29	**X 2,412,040 Y 690,277**	**810'**	**--**	**10/07, 01/08, 04/08**	**None**	**Intermittent**	**See Map**
D-30	**X 2,410,275 Y 690,448**	**830'**	**--**	**10/07,01/08, 03/08**	**None**	**Intermittent**	**See Map**
D-31	**X 2,415,151 Y 690,076**	**760'**	**--**	**10/07, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
D-32	**X 2,414,226 Y 690,352**	**760'**	**--**	**10/08, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
D-33	**X 2,410,526 Y 690,434**	**820'**	**--**	**10/08, 01/07, 03/08**	**None**	**Intermittent**	**See Map**
D-34	**X 2,410,646 Y 689,914**	**815'**	**--**	**10/07, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
D-35	**X 2,406,776 Y 688,849**	**965'**	**--**	**10/07, 12/07, 03/08**	**None**	**Intermittent**	**See Map**
D-36	**X 2,414,821 Y 695,773**	**720'**	**--**	**10/07, 01/08, 04/08**	**None**	**Intermittent**	**See Map**
U-1A	**X 2,407,687 Y 689,019**	**890'**		**09/07, 12/07, 03/08**	**None**	**Pea Vine Creek, Perennial**	**See Map**

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

05/08
DNR-744-9084

AEC 09434

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
U-1B	X 2,412,592 Y 689,813	800'		09/07, 01/08, 03/08	None	Intermittent	See Map
U-2	X 2,415,585 Y 694,662	720'		09/07, 12/07, 03/08	None	Captina Creek, Perennial	See Map
U-2A	X 2,410,262 Y 698,321	750'		09/07, 12/07, 03/08	None	Captina Creek, Perennial	See Map
U-10-9	X 2,403,915 Y 691,186	1110'	--	09/07, 01/08, 03/08	None	Intermittent	See Map
U-10	X 2,403,115 Y 693,267	1005'		10/07, 12/07, 03/08	None	Perennial	See Map
U-10A	X 2,404,139 Y 694,875	1090'		10/07, 12/07, 03/08	None	Intermittent	See Map
U-10B	X 2,405,434 Y 694,321	1100'		10/07, 12/07, 03/08	None	Intermittent	See Map
U-10C	X 2,406,369 Y 692,570	1010'	--	10/08, 12/07, 03/08	None	Intermittent	See Map
U-10D	X 2,406,428 Y 690,430	990'	--	10/08, 12/07, 03/08	None	Intermittent	See Map
U-11	X 2,407,256 Y 694,077	1050'	--	09/07, 12/08, 03/08	None	Intermittent	See Map

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

05/08
DNR 744 9084

AEC 09435

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
U-12	X 2,408,467 Y 695,802	1150'	--	10/07, 01/08, 04/08	None	Perennial	See Map
U-13	X 2,412,300 Y 695,539	980'	--	10/07, 01/08, 03/08	None	Perennial	See Map
U-13A	X 2,413,632 Y 692,491	960'	--	10/07, 12/07, 0208	None	Intermittent	See Map
U-13B	X 2,413,222 Y 693,516	960'	--	10/07, 12/08, 02/08	None	Intermittent	See Map
U-14	X 2,408,783 Y 697,306	1040'		10/07, 01/08, 03/08	None	Intermittent	See Map
U-25	X 2,407,698 Y 691,374	1050'	--	10/07, 12/08, 04/08	None	Intermittent	See Map
U-26	X 2,410,522 Y 697,450	830'	--	10/07, 01/08, 03/08	None	Intermittent	See Map
U-29	X 2,411,311 Y 691,099	965'	--	10/07, 12/07, 04/08	None	Intermittent	See Map
U-30	X 2,408,926 Y 693,860	1120'	--	10/07, 01/08, 04/08	None	Intermittent	See Map
U-31	X 2,415,331 Y 689,438	860'		10/07, 01/08, 03/08	None	Intermittent	See Map

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SURFACE WATER INVENTORY

Applicant's Name: American Energy Corporation D-0425-16

ID No. Of Sampling Site from Hydrology Map	State Plane X-Y Coordinates	Surface Elevation (ft msl)	Discharge* (gpm or cfs)	Date Measured	Known Uses, including public water	Type of Supply (pond, perennial or intermittent stream, etc.)	Name of Owner
U-32	**X 2,413,707 Y 689,327**	**820'**		**10/07, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
U-34	**X 2,410,200 Y 689,328**	**860'**		**10/07, 01/08, 03/08**	**None**	**Intermittent**	**See Map**
U-36	**X 2,413,929 Y 696,255**	**980'**	--	**10/07, 01/08, 04/08**	**None**	**Intermittent**	**See Map**
P-007	**X 2,415,747 Y 694,933**	**720'**	--	**01-11**	**None**	**POND**	**Oklahoma Coal Company**
WI-56.00	**X 2,406,512 Y 689,596**	**1130'**	--	**09-07**	**None**	**POND**	**H. Malone**

* Do not include discharge values if such measurements are reported on the Hydrologic Analyses.

05/08
DNR 744 0084

AEC 09437

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	D-1			D-2		
2	Lab ID No.	0709295	0712064	0803021	0709294	0712066	0803387
3	Date Measured/Sampled	09-19-07	12-04-07	03-03-08	09-19-07	12-04-07	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-04-07	02-29-08	09-12-07	12-04-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	1.00 cfs	44.1 cfs	283.7 cfs	5.25 cfs	116.6 cfs	175 cfs
8	pH (Standard Units)	7.74	7.90	8.13	8.26	7.56	8.45
9	Total Acidity (mg/l $CaCO_3$)	1.4	<0.16	0.88	<0.16	1.6	0.62
10	Total Alkalinity (mg/l $CaCO_3$)	240	140	70	180	120	120
11	Total Iron (mg/l)	0.05	0.10	9.1	0.30	2.2	0.21
12	Total Manganese (mg/l)	0.014	<0.002	0.230	0.025	0.068	0.015
13	Total Aluminum (mg/l)	0.05	<0.04	10	0.15	1.4	0.27
14	Total Suspended Solids (mg/l)	<0.87	<0.87	260	1.3	9.3	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	240	150	100	320	170	150
16	Total Sulfates (mg/l)	51	44	28	540	98	79
17	Specific Conductivity (umhos/cm at 25°C)**	600	390	240	1900	530	510
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

*NOTE: If information required by item 6 is unobtainable, submit as an addendum to Hydrologic Analyses a statement giving the reasons why the information is unobtainable.

**NOTE: For each sample provide data for either item 17 or item 18.

05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-10			D-10A		
2	Lab ID No.	0709228	0712281	0803314	0710182	0712283	0803311
3	Date Measured/Sampled	09-17-07	12-18-07	03-19-08	10-09-07	12-18-07	03-09-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-18-07	03-19-08	10-01-07	12-18-07	03-08-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.11 cfs	2.7 cfs	1.82 cfs	0.0002 cfs	0.51 cfs	1.33 cfs
8	pH (Standard Units)	7.94	7.90	7.81	7.66	7.9	7.93
9	Total Acidity (mg/l $CaCO_3$)	5.5	3.0	0.71	1.6	2.3	0.81
10	Total Alkalinity (mg/l $CaCO_3$)	180	90	53	230	85	45
11	Total Iron (mg/l)	0.07	0.22	0.79	0.05	0.08	0.37
12	Total Manganese (mg/l)	<0.002	<0.002	0.009	0.054	<0.002	0.006
13	Total Aluminum (mg/l)	0.32	0.31	1.4	<0.04	0.14	0.58
14	Total Suspended Solids (mg/l)	<0.87	1.3	6.0	<0.87	<0.87	6.7
15	Total Hardness (mg/l as $CaCO_3$)	190	100	80	130	100	50
16	Total Sulfates (mg/l)	40	32	20	36	28	23
17	Specific Conductivity (umhos/cm at 25°C)**	440	260	180	600	240	160
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-10B			D-10C		
2	Lab ID No.	0710181	0712277	0803306	0710179	0712276	0803304
3	Date Measured/Sampled	10-09-07	12-18-07	03-19-08	10-09-07	12-18-07	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-18-07	03-19-08	10-01-07	12-18-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.00008 cfs	0.07 cfs	0.26 cfs	0.0004 cfs	0.09 cfs	0.26 cfs
8	pH (Standard Units)	7.66	7.93	7.97	7.82	8.10	8.04
9	Total Acidity (mg/l $CaCO_3$)	0.77	<0.16	0.76	2.7	<0.16	0.90
10	Total Alkalinity (mg/l $CaCO_3$)	210	87	45	200	88	5
11	Total Iron (mg/l)	3.1	0.28	0.86	0.70	0.15	0.61
12	Total Manganese (mg/l)	0.150	<0.002	0.047	0.013	,0.002	0.006
13	Total Aluminum (mg/l)	3.2	0.49	1.3	1.2	0.28	1.2
14	Total Suspended Solids (mg/l)	58	1.3	27	2.0	<0.87	6.7
15	Total Hardness (mg/l as $CaCO_3$)	210	160	70	220	150	60
16	Total Sulfates (mg/l)	39	30	26	42	33	13
17	Specific Conductivity (umhos/cm at 25°C)**	530	250	160	520	250	180
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-10D			D-10-10E		
2	Lab ID No.	0710185	0712280	0803313	10-09-07	0712278	0803310
3	Date Measured/Sampled	10-09-07	12-18-07	03-19-08	10-11-07	12-18-07	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-18-07	03-19-08	10-10-07	12-18-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0001 cfs	0.11 cfs	0.33 cfs	No Flow	0.007 cfs	0.13 cs
8	pH (Standard Units)	7.74	7.64	8.01		8.09	8.03
9	Total Acidity (mg/l $CaCO_3$)	<0.16	3.6	0.80		<0.16	0.86
10	Total Alkalinity (mg/l $CaCO_3$)	180	68	41		100	63
11	Total Iron (mg/l)	0.04	0.22	1.1		0.05	0.23
12	Total Manganese (mg/l)	0.030	<0.022	0.016		<0.002	0.002
13	Total Aluminum (mg/l)	<0.04	0.37	2.0		<0.04	0.22
14	Total Suspended Solids (mg/l)	<0.87	<0.87	16		<0.87	4.7
15	Total Hardness (mg/l as $CaCO_3$)	180	100	70		110	90
16	Total Sulfates (mg/l)	41	32	21		40	25
17	Specific Conductivity (umhos/cm at 25°C)**	480	210	150		300	210
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

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05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	D-10-10F			D-10I		
2	Lab ID No.	10-09-07	0712279	0803308	0710183	0801226	0803307
3	Date Measured/Sampled	10-11-07	12-18-07	03-19-08	10-09-07	01-10-08	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	12-18-07	03-19-08	10-01-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.03 cfs	0.11 cfs	0.0001 cfs	0.006 cfs	0.13 cfs
8	pH (Standard Units)		7.93	7.88	7.89	8.41	8.04
9	Total Acidity (mg/l $CaCO_3$)		<0.16	0.87	<0.16	0.19	0.80
10	Total Alkalinity (mg/l $CaCO_3$)		83	48	260	170	67
11	Total Iron (mg/l)		0.20	0.80	2.5	0.02	0.47
12	Total Manganese (mg/l)		<0.002	0.011	0.059	<0.002	<0.002
13	Total Aluminum (mg/l)		0.29	1.4	2.8	<0.04	0.89
14	Total Suspended Solids (mg/l)		<0.87	12	100	<0.87	2.0
15	Total Hardness (mg/l as $CaCO_3$)		100	70	270	190	100
16	Total Sulfates (mg/l)		30	21	44	50	24
17	Specific Conductivity (umhos/cm at 25°C)**		240	160	620	470	210
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	D-11			D-12		
2	Lab ID No.	0709229	0712103	0803424	10-10-07	0801329	0803434
3	Date Measured/Sampled	09-17-07	12-06-07	03-26-08	10-12-07	01-16-08	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-04-07	03-19-08	10-10-07	01-15-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0005 cfs	0.066 cfs	0.31 cfs	No Flow	0.17 cfs	0.48 cfs
8	pH (Standard Units)	7.87	7.7	8.14		7.68	8.23
9	Total Acidity (mg/l $CaCO_3$)	7.2	3.5	0.69		3.4	0.66
10	Total Alkalinity (mg/l $CaCO_3$)	200	140	110		100	93
11	Total Iron (mg/l)	1.2	13	0.48		0.01	0.17
12	Total Manganese (mg/l)	0.048	0.460	0.002		<0.002	<0.002
13	Total Aluminum (mg/l)	1.3	10	0.84		<0.04	0.13
14	Total Suspended Solids (mg/l)	12	220	<0.87		<0.87	,0.87
15	Total Hardness (mg/l as $CaCO_3$)	260	200	110		130	110
16	Total Sulfates (mg/l)	42	50	36		44	40
17	Specific Conductivity (umhos/cm at 25°C)**	490	380	310		310	300
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-13			D-13A		
2	Lab ID No.	0710032	0712059	0803390	10-01-07	0712060	0802302
3	Date Measured/Sampled	10-01-07	12-04-07	03-25-08	10-08-07	12-03-07	02-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	9-27-07	12-04-07	03-19-08	10-01-08	12-02-07	02-21-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.001 cfs	0.048 cfs	0.264 cfs	No Flow	0.003 cfs	0.037 cfs
8	pH (Standard Units)	8.14	8.47	8.34		8.20	8.13
9	Total Acidity (mg/l $CaCO_3$)	<0.16	1.5	0.63		2.4	0.36
10	Total Alkalinity (mg/l $CaCO_3$)	230	140	130		120	92
11	Total Iron (mg/l)	2.7	0.98	0.20		1.0	0.13
12	Total Manganese (mg/l)	0.072	0.036	<0.002		0.150	0.004
13	Total Aluminum (mg/l)	1.7	0.87	0.33		1.1	0.50
14	Total Suspended Solids (mg/l)	38	6.0	<0.87		13	4
15	Total Hardness (mg/l as $CaCO_3$)	260	180	150		160	170
16	Total Sulfates (mg/l)	65	55	44		72	61
17	Specific Conductivity (umhos/cm at 25°C)**	580	400	360		380	350
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	D-13B			D-13C		
2	Lab ID No.	10-01-07	0712061	0802302	10-01-07	0801313	0803392
3	Date Measured/Sampled	10-03-07	12-04-07	02-25-08	10-03-07	01-15-08	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-04-07	02-25-08	10-01-07	01-15-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.0026 cfs	0.037 cfs	No Flow	0.03 cfs	0.022 cfs
8	pH (Standard Units)		8.36	8.38		8.47	8.12
9	Total Acidity (mg/l $CaCO_3$)		1.0	<0.16		2.2	0.84
10	Total Alkalinity (mg/l $CaCO_3$)		140	130		120	83
11	Total Iron (mg/l)		0.07	0.14		0.11	0.58
12	Total Manganese (mg/l)		<0.002	0.004		<0.002	0.005
13	Total Aluminum (mg/l)		<0.04	0.44		0.11	1.1
14	Total Suspended Solids (mg/l)		13	3.3		<0.87	4.7
15	Total Hardness (mg/l as $CaCO_3$)		160	170		150	120
16	Total Sulfates (mg/l)		52	51		47	47
17	Specific Conductivity (umhos/cm at 25°C)**		400	380		350	280
18	Total Dissolved Solids (mg/l)**	--	--	--		--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-14			D-25		
2	Lab ID No.	10-01-07	0801249	0803382	09-27-07	0712102	0803399
3	Date Measured/Sampled	10-03-07	01-11-08	03-25-08	10-01-07	12-06-07	3-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	01-10-08	03-19-08	9-27-07	12-05-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.11 cfs	0.037 cfs	No Flow	0.002 cfs	0.26 10-01-07cfs
8	pH (Standard Units)		8.27	7.93		7.70	8.30
9	Total Acidity (mg/l $CaCO_3$)		1.1	1.8		1.8	0.63
10	Total Alkalinity (mg/l $CaCO_3$)		120	140		140	100
11	Total Iron (mg/l)		2.4	0.21		0.20	0.66
12	Total Manganese (mg/l)		<0.002	0.002		<0.002	0.006
13	Total Aluminum (mg/l)		4.5	0.38		0.29	1.2
14	Total Suspended Solids (mg/l)		24	4.7		<0.87	11
15	Total Hardness (mg/l as $CaCO_3$)		150	150		150	120
16	Total Sulfates (mg/l)		54	48		58	46
17	Specific Conductivity (umhos/cm at 25°C)**		370	400		410	320
18	Total Dissolved Solids (mg/l)**		--	--		--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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**NOTE: For each sample provide data for either item 17 or item 18.

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-26			D-27		
2	Lab ID No.	0710030	0801251	0803383	10-01-07	0801253	0803389
3	Date Measured/Sampled	10-01-07	01-11-08	03-25-08	10-03-07	01-11-08	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	9-27-07	01-10-08	03-19-08	10-01-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--		--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0004 cfs	0.869 cfs	0.264 cfs	No Flow	0.001 cfs	0.005 cfs
8	pH (Standard Units)	7.99	8.34	8.27		8.22	7.91
9	Total Acidity (mg/l $CaCO_3$)	2.3	2.2	0.81		1.9	1.6
10	Total Alkalinity (mg/l $CaCO_3$)	190	66	100		110	160
11	Total Iron (mg/l)	0.74	0.98	0.15		1.3	0.38
12	Total Manganese (mg/l)	<0.002	<0.002	<0.002		0.036	<0.002
13	Total Aluminum (mg/l)	1.3	1.3	0.27		1.4	0.66
14	Total Suspended Solids (mg/l)	42	14	<0.87		33	4.7
15	Total Hardness (mg/l as $CaCO_3$)	220	90	120		160	180
16	Total Sulfates (mg/l)	54	26	39		32	32
17	Specific Conductivity (umhos/cm at 25°C)**	510	220	290		320	390
18	Total Dissolved Solids (mg/l)**	--	--	--		--	--

Laboratory Name: Tra-Det, Inc.
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1(

1	ID No. Of Sampling Site From Hydrology Map	D-28			D-29		
2	Lab ID No.	0710031	0801254	0803388	10-10-07	0801230	0804034
3	Date Measured/Sampled	10-01-07	01-11-08	03-25-08	10-12-07	01-10-08	04-01-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	9-27-07	01-10-08	03-19-08	10-10-07	01-10-08	03-31-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--		--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0003 cfs	0.088 cfs	0.022 cfs	No Flow	0.110 cfs	0.066 cfs
8	pH (Standard Units)	7.90	8.22	8.38		8.49	8.49
9	Total Acidity (mg/l $CaCO_3$)	2.1	0.64	0.59		<0.16	0.64
10	Total Alkalinity (mg/l $CaCO_3$)	290	110	150		120	120
11	Total Iron (mg/l)	<0.01	1.0	0.55		0.04	0.20
12	Total Manganese (mg/l)	<0.002	0.018	0.007		<0.002	<0.002
13	Total Aluminum (mg/l)	<0.04	2.0	1.0		0.07	0.34
14	Total Suspended Solids (mg/l)	<0.87	17	11		<0.87	2.7
15	Total Hardness (mg/l as $CaCO_3$)	280	140	160		150	210
16	Total Sulfates (mg/l)	38	31	44		44	45
17	Specific Conductivity (umhos/cm at 25°C)**	640	320	400		370	370
18	Total Dissolved Solids (mg/l)**	--	--	--		--	--

Laboratory Name: Tra-Det, Inc.
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State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	D-30			D-31		
2	Lab ID No.	0710159	0801328	0803426	10-10-07	0801236	0803433
3	Date Measured/Sampled	10-08-07	01-16-08	03-26-08	10-12-07	01-10-08	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	01-16-08	03-19-08	10-10-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	No Flow	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0010 cfs	0.12 cfs	0.53 cfs		0.133 cfs	0.33 cfs
8	pH (Standard Units)	7.70	8.23	8.30		8.46	8.27
9	Total Acidity (mg/l $CaCO_3$)	<0.16	2.8	0.63		<0.16	0.62
10	Total Alkalinity (mg/l $CaCO_3$)	220	99	93		160	99
11	Total Iron (mg/l)	0.09	0.01	0.17		0.06	0.14
12	Total Manganese (mg/l)	0.005	<0.002	<0.002		<0.002	<0.002
13	Total Aluminum (mg/l)	<0.04	<0.04	0.23		0.10	0.14
14	Total Suspended Solids (mg/l)	<0.87	<0.87	<0.87		<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	210	120	110		180	110
16	Total Sulfates (mg/l)	46	38	36		56	36
17	Specific Conductivity (umhos/cm at 25°C)**	560	290	270		530	310
18	Total Dissolved Solids (mg/l)**	--	--	--		--	--

Laboratory Name: Tra-Det, Inc.
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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-32			D-33		
2	Lab ID No.	10-10-07	0801233	0803430	10-11-07	0801228	0803425
3	Date Measured/Sampled	10-12-07	01-10-08	03-26-08	10-15-07	01-10-08	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	01-10-08	03-19-08	10-10-08	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.453 cfs	1.09 cfs	No Flow	0.007 cfs	0.038 cfs
8	pH (Standard Units)		8.43	8.32		8.18	8.22
9	Total Acidity (mg/l $CaCO_3$)		<0.16	0.68		<0.16	0.76
10	Total Alkalinity (mg/l $CaCO_3$)		130	130		140	130
11	Total Iron (mg/l)		0.05	0.40		0.05	0.17
12	Total Manganese (mg/l)		<0.002	0.002		<0.002	<0.002
13	Total Aluminum (mg/l)		0.10	0.66		<0.10	0.25
14	Total Suspended Solids (mg/l)		<0.87	2.7		<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)		160	140		170	150
16	Total Sulfates (mg/l)		55	46		56	52
17	Specific Conductivity (umhos/cm at 25°C)**		470	410		440	390
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-34			D-35		
2	Lab ID No.	07102248	0801227	0803427	10-15-07	0712101	0803315
3	Date Measured/Sampled	10-11-07	01-10-08	03-26-08	10-18-07	12-06-07	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	01-10-08	03-19-08	10-10-07	12-05-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0004 cfs	0.800 cfs	1.1 cfs	No Flow	0.002 cfs	0.13 cfs
8	pH (Standard Units)	7.71	8.54	8.42		7.40	7.95
9	Total Acidity (mg/l $CaCO_3$)	<0.16	<0.16	0.46		1.2	0.72
10	Total Alkalinity (mg/l $CaCO_3$)	200	100	180		83	33
11	Total Iron (mg/l)	0.03	0.07	0.29		0.02	0.60
12	Total Manganese (mg/l)	<0.002	<0.002	<0.002		<0.002	<0.002
13	Total Aluminum (mg/l)	<0.04	<0.04	0.50		<0.04	1.3
14	Total Suspended Solids (mg/l)	<0.87	4.0	1.3		<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	210	150	160		100	40
16	Total Sulfates (mg/l)	48	42	54		34	16
17	Specific Conductivity (umhos/cm at 25°C)**	540	320	520		250	120
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	D-36					
2	Lab ID No.	10-16-07	0801311	0804030			
3	Date Measured/Sampled	10-18-07	01-15-08	04-01-08			
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H			
5	Date Last Precipitation Event (if applicable)	10-10-07	01-15-08	03-31-08			
6	Static Water Level of Well below Land Surface (feet)*	--	--	--			
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.05 cfs	0.13 cfs			
8	pH (Standard Units)		8.21	8.46			
9	Total Acidity (mg/l $CaCO_3$)		3.6	0.84			
10	Total Alkalinity (mg/l $CaCO_3$)		140	140			
11	Total Iron (mg/l)		0.06	0.31			
12	Total Manganese (mg/l)		<0.002	<0.002			
13	Total Aluminum (mg/l)		0.10	0.59			
14	Total Suspended Solids (mg/l)		<0.87	13			
15	Total Hardness (mg/l as $CaCO_3$)		170	270			
16	Total Sulfates (mg/l)		58	59			
17	Specific Conductivity (umhos/cm at 25°C)**		460	440			
18	Total Dissolved Solids (mg/l)**		--	--			

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-1A			U-1B		
2	Lab ID No.	0709313	0712100	0803463	0709296	0801232	0803429
3	Date Measured/Sampled	09-20-07	12-06-07	03-27-08	09-19-07	01-10-08	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-05-07	03-19-07	09-12-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.12 cfs	50.4 cfs	12.35 cfs	0.02 cfs	0.446 cfs	0.3 cfs
8	pH (Standard Units)	7.92	7.90	8.47	7.88	8.45	8.28
9	Total Acidity (mg/l $CaCO_3$)	3.4	0.46	0.30	3.7	<0.16	0.46
10	Total Alkalinity (mg/l $CaCO_3$)	210	150	110	210	140	120
11	Total Iron (mg/l)	0.06	0.04	0.14	0.21	0.51	0.10
12	Total Manganese (mg/l)	0.003	<0.002	<0.002	0.02	<0.002	<0.002
13	Total Aluminum (mg/l)	0.12	<0.04	0.06	0.23	0.51	0.06
14	Total Suspended Solids (mg/l)	<0.87	<0.87	<0.87	22	<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	200	150	160	210	150	120
16	Total Sulfates (mg/l)	41	51	31	44	41	32
17	Specific Conductivity (umhos/cm at 25°C)**	540	420	310	540	400	340
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1(

1	ID No. Of Sampling Site From Hydrology Map	U-2			U-10-9		
2	Lab ID No.	0709297	0712065	0803386	10-16-07	0712286	0803398
3	Date Measured/Sampled	09-19-07	12-04-07	03-25-08	10-18-07	12-18-07	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-04-07	03-19-08	10-10-07	12-18-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	5.25 cfs	92.6 cfs	201.9 cfs	No Flow	0.26 cfs	0.39 cfs
8	pH (Standard Units)	8.23	7.58	8.49		7.72	8.05
9	Total Acidity (mg/l $CaCO_3$)	0.30	3.3	0.73		1.9	0.93
10	Total Alkalinity (mg/l $CaCO_3$)	180	120	120		65	76
11	Total Iron (mg/l)	0.11	2.2	0.15		0.15	0.31
12	Total Manganese (mg/l)	0.020	0.067	0.010		<0.002	<0.022
13	Total Aluminum (mg/l)	0.17	1.4	0.21		0.18	0.43
14	Total Suspended Solids (mg/l)	<0.87	8.7	<0.87		<0.87	2.0
15	Total Hardness (mg/l as $CaCO_3$)	340	180	150		70	90
16	Total Sulfates (mg/l)	540	99	80		28	29
17	Specific Conductivity (umhos/cm at 25°C)**	2000	540	500		200	230
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-10			U-10A		
2	Lab ID No.	0710184	0712284	0803312	0710180	0712282	0803305
3	Date Measured/Sampled	10-09-07	12-18-07	03-19-08	10-09-07	12-18-07	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-18-07	03-19-08	10-01-07	12-18-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0002 cfs	1.1 cfs	6.75 cfs	0.0002 cfs	0.15 cfs	1.27 cfs
8	pH (Standard Units)	7.78	8.02	7.91	7.37	7.92	7.93
9	Total Acidity (mg/l $CaCO_3$)	<0.16	1.8	0.97	6.5	2.6	0.74
10	Total Alkalinity (mg/l $CaCO_3$)	200	87	49	220	57	31
11	Total Iron (mg/l)	0.06	0.10	0.46	0.07	0.19	0.18
12	Total Manganese (mg/l)	0.003	<0.002	0.006	0.310	<0.002	0.008
13	Total Aluminum (mg/l)	<0.04	0.14	0.72	<0.04	0.29	0.18
14	Total Suspended Solids (mg/l)	<0.87	<0.87	1.3	<0.87	<0.87	4.7
15	Total Hardness (mg/l as $CaCO_3$)	180	130	70	210	60	40
16	Total Sulfates (mg/l)	34	29	19	26	25	17
17	Specific Conductivity (umhos/cm at 25°C)**	510	240	160	540	180	130
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-10B			U-10C		
2	Lab ID No.	0710178	0712274	0803302	10-09-07	0712275	0803303
3	Date Measured/Sampled	10-09-07	12-18-07	03-19-08	10-11-07	12-18-07	03-19-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-18-07	03-19-08	10-01-07	12-18-07	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0001 cfs	0.22 cfs	0.05 cfs	No Flow	0.06 cfs	0.13 cfs
8	pH (Standard Units)	7.82	7.38	7.85		8.04	7.91
9	Total Acidity (mg/l $CaCO_3$)	2.0	0.86	<0.16		<0.16	1.0
10	Total Alkalinity (mg/l $CaCO_3$)	240	48	36		88	50
11	Total Iron (mg/l)	1.8	1.1	0.55		0.11	0.42
12	Total Manganese (mg/l)	0.083	0.022	0.009		<0.002	0.006
13	Total Aluminum (mg/l)	2.2	1.1	0.97		0.18	0.68
14	Total Suspended Solids (mg/l)	11	41	2.0		<0.87	4.0
15	Total Hardness (mg/l as $CaCO_3$)	240	70	60		100	50
16	Total Sulfates (mg/l)	37	32	22		30	24
17	Specific Conductivity (umhos/cm at 25°C)**	570	180	140		250	170
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-10D			U-2A		
2	Lab ID No.	0710186	0712287	0803309	0808131	1101565	0804463
3	Date Measured/Sampled	10-09-07	12-18-07	03-19-08	08-05-08	01-13-11	04-28-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-01-07	12-18-07	03-19-08	08-04-08	01-09-11	04-27-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0001 cfs	0.015 cfs	0.17 cfs	70.7 cfs	140	225
8	pH (Standard Units)	7.83	7.79	7.75	8.21	8.42	8.39
9	Total Acidity (mg/l $CaCO_3$)	<0.16	2.3	0.76	0.28	1.97	0.45
10	Total Alkalinity (mg/l $CaCO_3$)	210	68	40	170	160	160
11	Total Iron (mg/l)	0.14	0.29	0.69	0.08	0.13	0.10
12	Total Manganese (mg/l)	0.180	<0.002	0.020	0.011	0.032	0.017
13	Total Aluminum (mg/l)	<0.04	0.53	1.2	<0.04	ND	<0.04
14	Total Suspended Solids (mg/l)	4.7	<0.87	23	<6.7	ND	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	210	90	60	220	271	200
16	Total Sulfates (mg/l)	36	32	29	132	268	93
17	Specific Conductivity (umhos/cm at 25°C)**	530	220	170	882	1330	620
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-11			U-12		
2	Lab ID No.	0709397	0712108	080342	10-15-07	0801326	
3	Date Measured/Sampled	09-26-07	12-06-07	03-27-08	10-17-07	01-16-08	04-01-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-12-07	12-05-07	03-19-08	10-10-07	01-15-08	03-31-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0002 cfs	0.005 cfs	0.27 cfs	No Flow	0.006 cfs	0.017 cfs
8	pH (Standard Units)	7.41	7.1	8.08		7.23	8.51
9	Total Acidity (mg/l $CaCO_3$)	6.5	1.6	1.0		3.2	0.71
10	Total Alkalinity (mg/l $CaCO_3$)	200	110	76		46	97
11	Total Iron (mg/l)	0.96	0.30	1.1		0.11	0.16
12	Total Manganese (mg/l)	0.046	0.086	0.120		<0.002	<0.002
13	Total Aluminum (mg/l)	0.90	0.44	1.4		0.16	0.26
14	Total Suspended Solids (mg/l)	89	<0.87	4.0		<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	190	120	180		70	150
16	Total Sulfates (mg/l)	34	35	28		29	45
17	Specific Conductivity (umhos/cm at 25°C)**	480	310	230		190	310
18	Total Dissolved Solids (mg/l)**	--	--	--		--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-13			U-13A		
2	Lab ID No.	0710034	0801314	0803391	10-15-07	0712062	0802303
3	Date Measured/Sampled	10-01-07	01-15-08	03-25-08	10-17-07	12-04-07	02-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-27-07	01-15-07	03-19-08	10-10-07	12-04-07	02-25-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.007 cfs	0.004 cfs	0.4 cfs	No Flow	0.0034 cfs	0.013 cfs
8	pH (Standard Units)	7.42	8.43	8.14		8.27	8.01
9	Total Acidity (mg/l $CaCO_3$)	3.7	1.8	0.78		1.9	0.68
10	Total Alkalinity (mg/l $CaCO_3$)	200	110	76		110	48
11	Total Iron (mg/l)	0.32	0.02	0.43		0.39	0.15
12	Total Manganese (mg/l)	0.012	<0.002	0.002		0.005	0.002
13	Total Aluminum (mg/l)	0.46	<0.04	0.86		0.72	0.45
14	Total Suspended Solids (mg/l)	14	<0.87	2.7		4.0	<0.87
15	Total Hardness (mg/l as $CaCO_3$)	220	140	100		150	110
16	Total Sulfates (mg/l)	56	46	45		70	58
17	Specific Conductivity (umhos/cm at 25°C)**	510	350	270		380	280
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	U-13B			U-14		
2	Lab ID No.	10-17-07	0712063	0802305	10-16-07	0801250	0803385
3	Date Measured/Sampled	10-19-07	12-04-07	02-25-08	10-18-07	01-11-08	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	12-04-07	02-25-08	10-10-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.0017 cfs	0.026 cfs	No Flow	0.067 cfs	0.026 cfs
8	pH (Standard Units)		8.45	8.28		8.15	8.22
9	Total Acidity (mg/l $CaCO_3$)		1.3	0.47		0.91	0.72
10	Total Alkalinity (mg/l $CaCO_3$)		140	100		130	81
11	Total Iron (mg/l)		0.18	0.12		1.7	0.38
12	Total Manganese (mg/l)		0.004	<0.002		0.003	<0.002
13	Total Aluminum (mg/l)		0.11	0.27		3.1	0.78
14	Total Suspended Solids (mg/l)		<0.87	<0.87		25	4.0
15	Total Hardness (mg/l as $CaCO_3$)		170	140		160	100
16	Total Sulfates (mg/l)		52	55		51	42
17	Specific Conductivity (umhos/cm at 25°C)**		400	350		380	270
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-25			U-26		
2	Lab ID No.	--	0712105	0803400	0710029	0801252	0803384
3	Date Measured/Sampled	10-11-07	12-06-07	03-25-08	10-01-07	01-11-08	03-25-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L.	I	H
5	Date Last Precipitation Event (if applicable)	09-27-07	12-05-07	03-19-08	09-27-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	DRY	0.001 cfs	0.002 cfs	0.0008 cfs	0.65 cfs	0.132 cfs
8	pH (Standard Units)		7.2	7.34	8.11	8.31	8.15
9	Total Acidity (mg/l $CaCO_3$)		3.4	2.2	1.1	1.7	0.86
	Total Alkalinity (mg/l $CaCO_3$)		150	76	180	64	95
11	Total Iron (mg/l)		0.57	2.5	0.36	0.94	0.17
12	Total Manganese (mg/l)		0.007	0.094	<0.002	0.010	<0.002
13	Total Aluminum (mg/l)		1.1	2.3	0.58	1.3	0.26
14	Total Suspended Solids (mg/l)		4.0	93	5.3	12	<0.87
15	Total Hardness (mg/l as $CaCO_3$)		170	110	200	100	100
16	Total Sulfates (mg/l)		39	24	56	26	40
17	Specific Conductivity (umhos/cm at 25°C)**		380	230	470	220	300
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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05/08
DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	U-29			U-30		
2	Lab ID No.	10-10-07	0801231	0804033	0710160	0801327	0804032
3	Date Measured/Sampled	10-12-07	01-10-08	04-01-08	10-08-07	01-16-08	04-01-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	09-27-07	01-10-08	03-31-08	10-01-07	01-15-08	03-31-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.0825 cfs	0.038 cfs	0.0008 cfs	0.005 cfs	0.033 cfs
8	pH (Standard Units)		8.32	8.46	7.51	7.48	8.52
9	Total Acidity (mg/l $CaCO_3$)		<0.16	0.74	<0.16	2.4	0.68
10	Total Alkalinity (mg/l $CaCO_3$)		120	120	160	42	100
11	Total Iron (mg/l)		0.04	0.35	0.05	0.01	0.19
12	Total Manganese (mg/l)		<0.002	<0.002	0.027	<0.002	<0.002
13	Total Aluminum (mg/l)		0.09	0.69	<0.04	<0.04	0.36
14	Total Suspended Solids (mg/l)		<0.87	3.3	<0.87	<0.87	2.7
15	Total Hardness (mg/l as $CaCO_3$)		160	200	140	50	210
16	Total Sulfates (mg/l)		45	45	27	26	39
17	Specific Conductivity (umhos/cm at 25°C)**		370	360	390	160	310
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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DNR-744-9024

OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-16

1	ID No. Of Sampling Site From Hydrology Map	U-31			U-32		
2	Lab ID No.	10-10-07	0801235	0803432	10-10-07	0801234	0803431
3	Date Measured/Sampled	10-12-07	01-10-08	03-26-08	10-12-07	01-10-08	03-26-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	01-10-08	03-19-08	10-10-07	01-10-08	03-19-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	0.080 cfs	0.18 cfs	No Flow	0.369 cfs	0.49 cfs
8	pH (Standard Units)		8.42	8.37		8.42	8.32
9	Total Acidity (mg/l $CaCO_3$)		<0.16	0.41		<0.16	0.60
10	Total Alkalinity (mg/l $CaCO_3$)		140	150		130	120
11	Total Iron (mg/l)		0.11	0.57		0.15	0.40
12	Total Manganese (mg/l)		<0.002	0.009		<0.002	<0.002
13	Total Aluminum (mg/l)		0.23	0.57		0.31	0.70
14	Total Suspended Solids (mg/l)		<0.87	17		<0.87	<0.87
15	Total Hardness (mg/l as $CaCO_3$)		170	160		180	150
16	Total Sulfates (mg/l)		51	50		54	45
17	Specific Conductivity (umhos/cm at 25°C)**		490	460		460	420
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
State: WV Zip: 26059

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OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	U-34			U-36		
2	Lab ID No.	0710249	0801229	0803428	10-16-07	0801312	0804031
3	Date Measured/Sampled	10-11-07	01-10-08	03-26-08	10-18-07	01-15-08	04-01-08
4	High (H), Low (L), Intermediate (I) (if applicable)	L	I	H	L	I	H
5	Date Last Precipitation Event (if applicable)	10-10-07	01-10-08	03-19-08	10-10-07	01-15-08	03-31-08
6	Static Water Level of Well below Land Surface (feet)*	--	--	--	--	--	--
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	0.0003 cfs	0.625 cfs	0.84 cfs	No Flow	0.002 cfs	0.017 cfs
8	pH (Standard Units)	8.10	8.44	8.35		7.41	8.51
9	Total Acidity (mg/l $CaCO_3$)	<0.16	<0.16	0.66		2.1	0.65
10	Total Alkalinity (mg/l $CaCO_3$)	200	100	98		85	130
11	Total Iron (mg/l)	0.14	0.11	0.14		0.10	0.26
12	Total Manganese (mg/l)	<0.002	<0.002	<0.002		<0.002	<0.002
13	Total Aluminum (mg/l)	<0.04	0.17	0.13		0.11	0.51
14	Total Suspended Solids (mg/l)	<0.87	<0.87	<0.87		<0.87	3.0
15	Total Hardness (mg/l as $CaCO_3$)	180	130	120		100	250
16	Total Sulfates (mg/l)	51	41	40		33	57
17	Specific Conductivity (umhos/cm at 25°C)**	540	320	310		270	410
18	Total Dissolved Solids (mg/l)**	--	--	--	--	--	--

Laboratory Name: Tra-Det, Inc.
Address: R. D. #2, Battle Run Road
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OHIO DEPARTMENT OF NATURAL RESOURCES
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HYDROLOGIC ANALYSES

Applicant's Name: American Energy Corporation D-0425-1

1	ID No. Of Sampling Site From Hydrology Map	WI-56.00	P-007				
2	Lab ID No.	0709381	1101565				
3	Date Measured/Sampled	09-25-07	1-13-11				
4	High (H), Low (L), Intermediate (I) (if applicable)	SUPPLEMENTAL					
5	Date Last Precipitation Event (if applicable)	9-12-07	1-09-11				
6	Static Water Level of Well below Land Surface (feet)*	--					
7	Discharge for Spring, Stream, Pond, Mine, etc. (gpm or cfs)	No Flow	No Flow				
8	pH (Standard Units)	9.08	7.70				
9	Total Acidity (mg/l $CaCO_3$)	<0.16	10.7				
10	Total Alkalinity (mg/l $CaCO_3$)	56	144				
11	Total Iron (mg/l)	0.11	0.52				
12	Total Manganese (mg/l)	0.011	0.13				
13	Total Aluminum (mg/l)	0.14	0.14				
14	Total Suspended Solids (mg/l)	72	ND				
15	Total Hardness (mg/l as $CaCO_3$)	190	670				
16	Total Sulfates (mg/l)	14	371				
17	Specific Conductivity (umhos/cm at 25°C)**	130	1200				
18	Total Dissolved Solids (mg/l)**	--	--				

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DNR-744-9024

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
2008 RAINFALL

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE - ALLEDONIA STATION
RAINFALL - 2008

RAINFALL AS OF: 01/18/11

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.37
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.52	0.00	1.62	0.00	0.01	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.09	1.14	1.20	0.06	0.00	0.00	0.00	0.00
5	0.00	1.24	0.00	0.00	0.03	0.00	1.09	0.00	0.00	0.00	0.00	0.00
6	0.04	0.34	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.10	0.04	0.15	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.24	0.03
8	0.00	0.00	0.09	0.00	0.29	0.00	0.75	0.00	0.06	0.56	0.00	0.00
9	0.00	0.04	0.00	0.00	0.18	0.12	0.00	0.00	0.00	0.00	0.00	
10	0.68	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	
11	0.00	0.08	0.00	0.00	0.02	0.00	0.00	0.00	0.22	0.00	0.00	
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.24	0.00	0.23	
13	0.05	0.61	0.03	0.00	0.00	0.54	0.00	0.00	0.00	0.00	0.00	
14	0.02	0.00	0.00	0.00	0.00	0.33	0.00	0.01	0.04	0.00	0.64	
15	0.01	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
16	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.05	
17	0.06	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	
18	0.00	0.00	1.20	0.00	0.64	0.17	0.00	0.00	0.00	0.00	T	
19	0.00	0.00	0.77	0.27	0.03	0.01	0.00	0.00	0.00	0.00	0.00	
20	0.00	0.00	0.00	0.26	0.00	0.00	1.17	0.00	0.00	0.01	0.00	
21	0.00	0.32	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.56	
25	0.00	0.34	0.00	0.00	0.81	0.00	0.00	0.00	0.01	0.00	0.12	
26	0.04	0.29	0.00	0.00	0.00	0.00	0.00	0.29	0.05	0.00	0.00	
27	0.02	0.06	0.00	0.12	0.00	0.00	0.00	0.91	0.00	0.00	0.00	
28	0.08	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00	
29	0.00	0.35	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	
30	0.00		0.00	0.00	0.00	0.47	0.15	0.00	0.05	0.02	0.00	
31	0.71		0.01		0.00		0.01	0.00		0.00		
TOTAL	1.88	3.86	3.05	1.17	3.17	6.21	4.52	1.34	0.67	1.44	1.88	0.40
H/L	L	H	L	L	L	H	H	L	L	L	L	L

Rain gauge is read at 7:00 am for the prior day. **H/L compares the monthly rainfall with the 50 year average for this area**

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE - ALLEDONIA STATION
RAINFALL - 2007

RAINFALL AS OF: 01/18/11

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1	0.06	0.00	0.82	0.95	0.00	0.00	0.00	0.00	0.00	0.08	0	0	
2	0.00	T	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0	0	1.1	
3	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0	0	0	
4	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0	0.01	0.13	
5	0.63	0.00	0.00	0.00	0.23	0.00	0.00	1.63	0.00	0	0	0.18	
6	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	
7	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0	0	0	
8	T	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0	0	0	
9	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.60	0	0	0.74	
10	0.00	0.00	0.09	0.00	0.00	0.52	0.00	0.00	0.23	0.01	0	0.04	
11	0.00	0.00	0.00	0.68	0.00	0.00	1.70	0.00	0.00	0	0	0.29	
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0	0.57	0.63	
13	0.44	1.05	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0	0.18	0.31	
14	0.55	0.03	1.51	0.49	0.00	0.00	0.02	0.00	0.00	0	0.55	0	
15	0.68	0.00	0.19	0.26	0.00	0.00	0.05	0.00	0.00	0	0.1	0	
16	0.00	T	0.00	0.00	0.82	0.00	0.00	0.86	0.00	0	0	0.58	
17	0.00	T	0.00	0.00	0.28	0.00	0.02	0.00	0.00	0	0	0	
18	0.00	0.09	0.00	0.00	0.04	0.00	1.26	0.05	0.00	0	0	0.01	
19	0.00	0.00	0.65	0.00	0.00	1.25	0.37	0.35	0.00	0.06	0	0	
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.26	0	0	
21	0.26	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	T	0	0	
22	T	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0	0	
23	T	0.00	1.07	0.05	0.00	0.00	T	0.00	0.00	0.96	0	0.45	
24	0.01	0.00	0.37	0.00	0.00	0.01	0.96	0.00	0.00	0.25	0	0	
25	0.00	0.82	0.00	0.46	0.00	0.00	T	0.00	0.00	0	0.98	0	
26	0.00	0.00	0.00	0.33	0.00	0.00	1.25	0.00	0.04	0	1.3	0.03	
27	0.00	0.00	T	0.00	0.00	0.21	0.00	0.00	1.11	0	0	0	
28	0.01	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0	1.03	0.38	
29	0.00		0.00	0.00	0.00	0.00	0.29	0.00	0.00	0	0	0	
30	0.00		0.00	0.02	0.00	0.00	0.00	0.00	0.00	0	0	0	
31	0.00		0.00		0.00		0.00	0.00		0		0	
TOTAL	3.16	1.99	4.99	3.26	1.37	3.44	5.97	5.51	2.00	1.85	4.72	4.87	43.13
H/L	H	L	H	L	L	L	H	H	L	L	H	H	H

Rain gauge is read at 7:00 am for the prior day. H/L compares the monthly rainfall with the 50 year average for this area

PART 3: RECLAMATION AND OPERATIONS PLAN

A. GENERAL REQUIREMENTS

(1) Describe the type and method of coal mining procedures.

Full coal recovery, longwall mining method. Partial Coal Recovery, room and pillar mining method. See Addendum to Part 3, Item A(1).

(2) Describe the proposed engineering techniques to be used in this mining operation.

See Addendum to Part 3, Item A(2).

(3) Anticipated annual production of coal: **5,384,615** tons
Anticipated total production of coal: **10,769,230 tons**

See Addendum to Part 3, Item A(3) tons

(4) List the major pieces of equipment to be used for all aspects of the operation.

Longwall shearer, shields, face conveyor, continuous miner, roof bolters, shuttle cars, scoop cars, tail piece, crusher, and beltline.

(5) Will access to the underground workings be gained through a drift entry?

Yes ☐ No ☒ If "yes," describe the location of the entry relative to the highest elevation of the coal reserve.

See Addendum to Part 3, Item A(5)

(6) For entries to underground workings other than drift entries, describe the location of the entry relative to the coal reserve.

Entry to the proposed D-0425-16 will be accessed through D-0425-12 at the southwestern corner of D-0425-16.

(7) Are the entries in (6) located so as to eliminate the potential for a gravity discharge?
Yes ☒ No ☐ If "no," the applicant must demonstrate the following:

D-0425-16

FEB 07 2011

ADDENDUM TO PART 3, ITEM A(1)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

TYPE OF MINING METHODS

Mining to be conducted within the limits of the proposed adjacent area, D-0425-16, shall utilize the longwall method. Machinery and equipment used for this type of mining is listed in Part 3, Item A(4).

The Century Mine is an operation that uses the longwall method as its primary method of mining. The Room & Pillar method is used for development and access to these panel areas. While continuous miners are used for these development entries, they are not considered production sections. This mining method maximizes the recovery of the reserve by leaving coal only in the remaining pillars in the development entries (main and gate entries) and barrier pillars to protect the main entries.

The mining will progress from existing travelways in the adjacent D-0425-12 underground mine to this application area through main entries that will carry the ventilation air currents and contain the haulage entries. These main entries will branch out into the gate entries that will surround and outline the longwall panels. These mining units are considered part of the longwall mining to be conducted at the Century Mine. Full coal recovery (Longwall mining) methods are planned for most of the application area.

There is no room and pillar mining method projected for production in this application area. The partial recovery areas are for development and access to the longwall panels.

The approximate timing for the mining operations within this proposed adjacent area is Shown on the Timing, Structure Contour, Coal Deed Map, Addendum to Part 4, Item B(1). This method of permitting will allow for any changes in the mine plan which may be caused by unforeseen geologic conditions, production demand changes, or any other problems which may arise during the underground mining operations.

ADDENDUM TO PART 3, ITEM A(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

ENGINEERING AND MINING TECHNIQUES

For those areas mapped as longwall areas, the engineering and mining techniques for longwall mining are as follows:

Longwall Mining

1. Longwall mining removes long rectangular panels of coal that are 600 to 1150 ft wide and a maximum of approximately 15,000 ft. long. A longwall shearer, a double-drum machine, removes the panel by cutting slices of coal along the width of the face. The roof is temporarily supported by hydraulic supports called shields. The shields are moved forward each time that a slice is cut from the face. The coal is transported from the face by an armored, chain conveyor to the gate entry where it is transported to the main conveyor for removal from the mine.

The roof behind the shields is allowed to collapse. Surface subsidence on the order of approximately 69 percent of the mining height occurs when the roof falls.

2. The longwall face is outlined by three or four entries on each side called gate entries, on the end where the panel starts by several entries called bleeder entries, and on the panel end by the main entries or by recovery rooms (entries developed to remove the longwall mining equipment). These entries are developed using a continuous miner, shuttle cars, and roof bolters. Pillars and concrete block stoppings separate each entry from the next. These entries provide ventilation and belt haulage for the longwall mining section, with a maximum recovery of less than 50 percent of the coal. Coal pillars between the longwall panels crush after both adjacent longwall panels are extracted. Subsidence of the surface occurs over these panels and pillars during longwall mining as a result of the pillars crushing and from the extraction of both adjacent longwall panels. These areas are considered as full recovery mining areas. The development gate entries, utilizing room and pillar mining between the panels, are considered and calculated to be within the full recovery mining area acreage as they are included within the angle of draw for subsidence. This allows flexibility in adjusting the mains and gates as plans and conditions dictate. Room & pillar areas along the boundary of the shadow area where they do not border existing shadow area for longwall mining are not included in the full recovery mining area but are included in the Partial Coal Recovery Area.

Main Entry Development – Longwall Access

3. There will be one set of main entries driven in a slightly northeastern direction extending from the main entries of the D-0425-12 Adjacent Area. The main entries consist of approximately seven entries, driven with continuous miners and are primarily used for ventilation, transportation of men and materials, and haulage. These entries are designed for long-life with the pillars providing roof support. The maximum recovery factor for mains and sub mains is below 50 percent and is much less if one considers the barrier blocks left in place at the approaches to butt and longwall sections. These are included in the Partial Coal Recovery Area.

There is a barrier pillar planned for the area that lies to the southwest of the southern most longwall panel, as indicated by the zero subsidence line which lies in the Partial Coal Recovery Area. Barrier pillars are a normal part of protection of the main entries, as the barrier pillar absorbs any additional loading from the longwall panel so that it does not override onto the main entry pillars.

Room and Pillar Mining

4. Room and Pillar Mining consists of making parallel cuts with cross cuts between the parallel sections. This method uses a continuous miner with a single cutting drum to cut the coal from the seam. The roof is supported by bolts into the overhead strata. The coal is transported by shuttle cars to the conveyor, at which point it is removed from the mine.

Addendum to Part 3, Item A(3)
American Energy Corporation
Century Mine
Permit D-0425-16

Current Capacity for coarse refuse available at the Coarse Coal Refuse site on AEC Permit D-0425-2: **16,640,392 tons**

Coarse Refuse Coal waste to be generated by D-0425-16 application: **2,503,846 tons**

Note: Calculations based on using 31% plant reject with 3:1 coarse to fines (75% coarse coal)

D-0425-16 Permit ONCO Area			
ROM Coal Tons	Clean Tons 69%	Total Reject 31%	Coarse Refuse To site
10,769,230	7,430,769	3,338,461	2,503,846

Current Capacity for slurry available at Ohio Valley Coal Company No. 2 Dam: **8,883,784 tons**

Coal slurry to be generated by D-0425-16 application: **834,615 tons**

Note: Calculations based on using 31% plant reject with 3:1 coarse to fines (25% coal fines)

D-0425-16 Permit ONCO Area			
ROM Coal Tons	Clean Tons 69%	Total Reject 31%	Slurry To site 3:1 (25%)
10,769,230	7,430,769	3,338,461	834,615

The coarse refuse generated by AEC collective permits D-0425 goes to the Coarse Coal Refuse site on AEC Permit D-0425-2. The coal slurry generated by AEC collective permits D-0425 goes to the Coal Slurry Refuse Impoundment at Ohio Valley Coal Company No. 2 Dam. The coal slurry generated by OVCC collective permits D-0360 also goes to this Coal Slurry Refuse Impoundment. The current remaining capacity of the Coarse Coal Refuse site on AEC Permit D-0425-2 and Coal Slurry Refuse Impoundment at Ohio Valley Coal Company No. 2 Dam is adequate to contain the refuse generated by the remaining raw coal projected to be mined by all currently issued Mining Permits as outlined respectively. Coarse Refuse generated by OVCC permits D-0360 goes toward building the Ohio Valley Coal Company No. 2 Dam of the Coal Slurry Impoundment.

Greg S. Williams, PE

2/14/11
Date

STATE OF OHIO
GREG S. WILLIAMS
E-57996
REGISTERED PROFESSIONAL ENGINEER

D-360-23 Permit: Mains, Gates and Panels

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 68.50%	Total Refuse @ Reject 31.50%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
84,429,066 1,938.22	4.25 AC	358,823,531	30,500,000,093	15,250,000	10,446,250	4,803,750	1,200,938	3,602,813

D-425-9 Permit: South Long Wall Mining

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 50.00%	Total Refuse @ Reject 50.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
1,834,385 42.11	4.25 AC	7,796,136	662,671,581	331,336	165,668	165,668	41,417	124,251

D-425-10 Permit: North Peavine Mains and Gates

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 70.00%	Total Refuse @ Reject 30.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
681,079 15.64	6 AC	4,086,474	347,350,290	173,675	121,573	52,103	13,026	39,077

D-425-12 Permit: North Peavine Mains and Gates and Panels

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 70.00%	Total Refuse @ Reject 30.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
43,774,315 1,004.92	6.25 AC	273,589,469	23,255,104,844	11,627,552	8,139,287	3,488,266	872,066	2,616,199

D-425-14 Permit: West Beallsville

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 62.00%	Total Refuse @ Reject 38.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
18,414,329 422.73	5 AC	92,071,645	7,826,089,825	3,913,045	2,426,088	1,486,957	371,739	1,115,218

D-425-15 Permit: Beallsville #2

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 60.00%	Total Refuse @ Reject 40.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
2,917,220 66.97	5 AC	14,586,100	1,239,818,500	619,909	371,946	247,964	61,991	185,973

D-425-16 Permit ONCO

Mining Area SF	Coal Height	CF	LBS @(LBS/CF)= 85	Raw Tons (Pounds/ton) 2000	Clean Tons @ Plant Thru 69.00%	Total Refuse @ Reject 31.00%	Slurry Tons @ 25.00%	Coarse Refuse Tons To Site
42,232,275 969.52	6 AC	253,393,650	21,538,460,250	10,769,230	7,430,769	3,338,461	834,615	2,503,846
			All Remaining permits to be mined=		29,101,579	13,583,168	**3,395,792**	**10,187,376**

Remaining Refuse Capacity Available @ submittal (Volume in Tons)		Projected Refuse in Permits (Volume in Tons)	
Coarse Refuse Tons @ AEC D-0425-2 =	**16,640,392**	Total Coarse Refuse Tons to AEC D-0425-2 =	**10,187,376**
Slurry Refuse Tons @ OVCC Dam No.2 =	**8,883,784**	Total Slurry Refuse Tons to OVCC Dam No.2 =	**3,395,792**

(a) The coal seam is not acid or iron producing. Provide an analysis of the strata immediately above and below the coal, and the coal seam itself, sufficient to demonstrate that the water quality from the entry will meet effluent limitations without treatment.

Or,

(b) How the water will be treated to meet effluent limitations and provisions will be made for consistent maintenance of the treatment facility throughout the anticipated period of gravity discharge

(8) Will the permanent entry seals be designed to withstand the maximum anticipated hydraulic head when the operations are abandoned?

Yes ☒ No ☐ If "yes," submit the appropriate information demonstrating that this will be accomplished. If "no," provide a typical plan for the seals to be used to close the mine entries pursuant to applicable state and federal regulations.

(9) Submit Performance Security Estimate providing an estimate of the reclamation cost on the proposed operation.

(10) Will the proposed mining operations be within 25 feet of any known oil or gas well?

☒ Yes ☐ No If yes, submit a variance request as an addendum to this item.

(11) Will the proposed operation include return of slurry or other mine waste or material into the abandoned underground workings?

Yes ☐ No ☒ If "yes," comply with provisions contained in paragraph (N) of rule 1501:13-4-14 and paragraph (Q) of 1501:13-9-04 of the Administrative Code, and submit copies of the required MSHA approvals as an addendum.

B. RECLAMATION PLAN – GENERAL REQUIREMENTS

(1) Describe the plan for minimizing to the extent possible and using the best technology currently available disturbances and adverse impacts of the operation on fish and wildlife and related environmental values, including compliance with the Endangered Species Act, and achieving enhancement of such resources where practical.

The proposed longwall mining operation is not expected to impact fish, wildlife, and other related environmental values. Minnows have been found in some of the larger stream segments within the application area. However, the normal annual cycle shows that during the summer and fall months, when the stream flow is minimal, the minnows swim downstream, only to return again. Observations show that stream segments that go dry

AMERICAN ENERGY CORP.
CENTURY MINE
PERMIT D-0425-16
ADDENDUM TO PART 3, A(8)

This mining area will be accessed by extending main entries from the northeast corner of the adjacent mine area D-0425-12. Mining the proposed area will not result in any discharge to the surface. Permanent mine seals will be installed at shaft locations when the mine closes. Therefore permanent entry seals are inappropriate for the D-0425-16 Application Area, as none are projected to be installed.

ADDENDUM TO PART 3, ITEM A(9)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

The Performance Security Estimate (PSE) does not apply to this adjacent area because this application is for the continuation of underground mining for permit D-0425. However, the PSE for the surface operations is up-to-date.

ADDENDUM TO PART 3, ITEM A(10)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

In order to comply with O.R.C. 1563.111, the Applicant will contact the Division's Mine Safety Section requesting permission from the Chief to mine within 25' of any oil or gas well within the proposed permit limits. The well(s) within the permit limits are listed below and shown on the application map.

Well #20366 has a Plug Report that is submitted as an addendum to this item. Refer to the table below, which provides information regarding the three oil and gas wells within the proposed shadow area. Since the two active wells (wells for which no plugging report exists) listed in the table below, P# 20286 and P# 61049, cannot be located at their recorded locations, there is no purpose in obtaining a Permit to Plug and Abandon from the Division. If any well is inadvertently intercepted by mining, an honest effort will be made immediately to plug the well with neat cement.

The proposed mining operation will maintain safe operating practices in any work involving areas near encountered gas wells. Work shall be done in order to ensure the safety of people, livestock, fish, and wildlife and machinery in the mine.

Site I.D.	Type	Twp	Location/Section	Field Located (Y/N)	Mine Status
20366	Plugged w/Report	Washington	SE ¼ SEC 10	No	Mine Through
20286	Active	Washington	NW ¼ SEC 3	No	Mine Through
61049	Active	Washington	SE ¼ SEC 9	No	Room & Pillar

Addendum to Part 3, A(10)

STATE OF OHIO DEPARTMENT OF NATURAL RESOURCES FORM 51 REVISED 3/01	DIVISION OF MINERAL RESOURCES MANAGEMENT WELL PERMIT	API WELL NUMBER 34-013-2-0366-00-00

OWNER NAME, ADDRESS
KEROGEN RESOURCES (Owner #: 3054)
5225 WEST PIKE
ZANESVILLE OH 43701

DATE ISSUED: 6/27/2006
PERMIT EXPIRES: 6/27/2007
TELEPHONE NUMBER: (740) 455-3016

IS HEREBY GRANTED PERMISSION TO: Plug and Abandon AND ABANDON NEW WELL
IF UNPRODUCTIVE
PURPOSE OF WELL: Oil & Gas
SUBSTANCE TO BE STORED OR COMPLETION DATE IF PERMIT TO PLUG: Cmpltd Dt: 12/19/1980

DESIGNATION AND LOCATION:

LEASE NAME	VAN DYNE	SECTION	10
WELL NUMBER	1	LOT	
COUNTY	BELMONT	FRACTION	
CIVIL TOWNSHIP	WASHINGTON	QUARTER TOWNSHIP	
TRACT OR ALLOTMENT		X:	2442450
FOOTAGE LOCATION	1100'SL & 920'EL OF SEC 10	Y:	696000

TYPE OF TOOLS: Service Rig
PROPOSED TOTAL DEPTH 2831 FEET
GROUND LEVEL ELEVATION 1243 FEET

GEOLOGICAL FORMATION(S):
BEREA-GORDON

SPECIAL PERMIT CONDITIONS:

CONDITIONALLY APPROVED CASING PROGRAM (SUBJECT TO APPROVAL OF THE OIL AND GAS WELL INSPECTOR):
CASING IN HOLE:
8 5/8" - 410'
4 1/2" - 2867'

This permit is NOT TRANSFERABLE and expires 365 days after issuance, unless drilling has commenced prior thereto. This permit, or an exact copy thereof, must be displayed in a conspicuous and easily accessible place at the well site before permitted activity commences and remain until the well is completed. Ample notification to inspector is necessary. All mudding, cementing, placing and removing casing, and plugging operations must be done under the supervision of:

OIL AND GAS WELL INSPECTOR:
KAVAGE MIKE
P. O. BOX 224,
OLD WASHINGTON, OH 43768
Inspector's #: (740) 685-0713
District #: (740) 439-9079

JOE HOERST - Supervisor
(740) 896-2850

FIRE AND EMERGENCY NUMBERS
FIRE: ( ) - 911
MEDICAL SERVICE ( ) - 911

DIVISION HAS NO RECORD OF PERF 'S, BEREA WAS NOT PERMITTED.

DEPUTY MINE INSPECTOR: MUST BE NOTIFIED IF WELL IN A COAL-BEARING TOWNSHIP IS TO BE PLUGGED AND ABANDONED.

Michael L. Sponsler
CHIEF, DIVISION OF MINERAL RESOURCES MANAGEMENT

DNR 5606 (Rev. 3/01)

AEC 09478

Ohio Department of Natural Resource
Division of Mineral Resources Management
1855 Fountain Square Court, Building H3
Columbus, Ohio 43224
Form 55: Revised 12/97

Plug Report

366
Belmont

API Well Number:
34-013-2-0366-00-00

JUL - 5 2006

Well Owner: KEROGEN RESOURCES
Lease Name: VAN DYNE # 1 Well No. 1
County: BELMONT Township: WASHINGTON
Driller: CUBBY DRLG Status PA
Plugging Company
Cement Manufactor ESSROC
Cement Contractor FORMATION CEMENTING, INC.
Clay Company
Footage Calls: 1100'SL & 920'EL OF SEC 10
Plug Back Frm PlugBackDepth: 0 PluggingTotalDepth: 2700
Comment: Company tools

GPS Lat: 39.900450
Long: 80.923000

Permit Issued: 12/05/1980
Date Completed: 12/19/1980
Plug_Start: 6/29/2006
Plug _End: 6/29/2006
Duration: 6
DNR Notified?: Yes
Reason for Plugging: Incap. of Prod./Inj.
Plug Desctiption Cement
Clay/Cement Tickets Rec: Yes

Formation	TOP	BOT	METH_	Producing	NonStandard	CMMNT
MAXTON SAND	1427	1450	D	No		
KEENER SAND	1600	1660	D	No		
BIG INJUN SAND	1669	1833	D	No		
WEIR SAND	1989	2011	D	No		
BEREA SANDSTONE	2194	2206	D	No		
OHIO SHALE	2206		D	No		

RECEIVED
JUL 10 2006
DIVISION OF MINERAL RESOURCES MANAGEMENT

PLUG 1 TYP Cement Density Tons Cla GEL_VIS
INTERVAL_BOT INTERVAL_TO Weight 15.6 Stat CLASS_CMT Class A Cement
Cemntd Dt 6/29/2006 Bot 2700 Top 2500 Sack 15 Notification ☐ Failed ☐ Wit ☑

AEC 09479

FMTN_C DEVONIAN Inspector KAVAGE MIKE

Spacer Type VISCOSITY SPACER_WEIGHT: ☐ CIRCULATION

DISPLACEMENT_VO CEMENT_ADDITIVES:

CMMNT BULLHEAD ALL PLUGS THRU 4.5" TUBING.

PLUG 2 TYP Cement Density Tons Cla GEL_VIS

INTERVAL_BOT INTERVAL_TO Weight 15.6 Stat CLASS_CMT Class A Cement

Cemntd Dt 6/29/2006 Bot 2200 Top 2100 Sack 8 Notification ☐ Failed ☐ Wit ☑

FMTN_C BEREA SANDSTONE AND OHIO S Inspector KAVAGE MIKE

Spacer Type VISCOSITY SPACER_WEIGHT: ☑ CIRCULATION

DISPLACEMENT_VO CEMENT_ADDITIVES:

CMMNT

PLUG 3 TYP Cement Density Tons Cla GEL_VIS

INTERVAL_BOT INTERVAL_TO Weight 15.6 Stat CLASS_CMT Class A Cement

Cemntd Dt 6/29/2006 Bot 500 Top 300 Sack 25 Notification ☐ Failed ☐ Wit ☑

FMTN_C CENOZOIC Inspector KAVAGE MIKE

Spacer Type VISCOSITY SPACER_WEIGHT: ☑ CIRCULATION

DISPLACEMENT_VO CEMENT_ADDITIVES:

CMMNT

PLUG 4 TYP Cement Density Tons Cla GEL_VIS

INTERVAL_BOT INTERVAL_TO Weight 15.6 Stat CLASS_CMT Class A Cement

Cemntd Dt 6/29/2006 Bot 200 Top 0 Sack 56 Notification ☐ Failed ☐ Wit ☑

FMTN_C CENOZOIC Inspector KAVAGE MIKE

Spacer Type VISCOSITY SPACER_WEIGHT: ☑ CIRCULATION

DISPLACEMENT_VO CEMENT_ADDITIVES:

CMMNT

Total Duration 6

The inspector's signature below attests that he/she accurately recorded information pertaining to the plugging operation actually witnessed, and by the information provided on the dates and times listed above. The inspector's signature does not imply that the owner/operator has successfully plugged the well bore in compliance with the objectives stated in Section 1501:9-11-03 or 4101:10-1-02 of the Ohio Administrative Code, or that plugging materials for untested plug(s) actually remained across the intervals that they were intended to s

Mike Kavage
(Signature of Inspector)

06/29/2006
Date Plugging Completed

OWNER AFFIDAVIT

By signing this affidavit, you are swearing or affirming that the information it contains is true and accurate.

I, _____, after being first duly cautioned and sworn, state that I have personal knowledge of all the facts contained in this Affidavit, that I am competent to testify to the matters stated herein, and that the following are true to the best of my knowledge and belief:

1. That I am the owner or operator agent who placed plugging material in the well referenced in this plugging report;
2. That the attached clay or cement tickets, affidavits, and/or bill of lading are the actual records for such materials used to plug the well referenced in this report; and
3. That I have read this plugging report, and the plugging materials were properly placed at the depths indicated on this plugging report in accordance with Chapter 1509 of Ohio Revised Code, Section 4101:10 et seq. of the Ohio Administrative Code and/or 1501:9-11-01 et seq. of the Ohio Administrative Code;

Further Affiant sayeth naught.

In testimony whereof, I have herewith subscribed my name this _____ day of _____, 19____.

/ /
Date Plugging Completed

Signature of Owner or Operator Agent

The foregoing instrument was sworn to, subscribed and acknowledged before me this _____ day of _____, 19____

Notary Public Signature

This report shall be submitted to the ODNR Division of Oil and Gas within 30 days after the date the surface hole is plugged.

AEC 09481

following subsidence have returned to near their normal flow, and will again support minnows. The larger streams will return to normal flow faster than smaller streams because more sediment is carried in larger streams and help fill any residual cracks that may be found.
Wildlife has not been shown to be affected by longwall mining. If surface slips are caused by mining activities, over the mining area, American Energy Corporation will restore the land to a condition equal to its original value and reasonably forseeable use. Undeveloped springs that are found above the application area may be dewatered and usually reposition themselves downstream. American Energy Corporation will replace undeveloped springs if they are legitimately used according to our water replacement plan.

C. RECLAMATION PLAN-PROTECTION OF HYDROLOGIC BALANCE

(1) Based on the baseline data submitted in response to Part 2, items B, C, D and other submitted information in this application, describe the probable hydrologic consequences of this proposed underground mining operation on the hydrologic regime of the proposed shadow area and adjacent areas. The description shall include findings on each of the following items:

(a) The consequences of the proposed operation on the contents of dissolved and total suspended solids, total iron, total manganese and pH;
(b) Whether adverse impacts may occur to the hydrologic balance;
(c) The impact the proposed operation will have on:
  i) Sediment yield from the disturbed area,
  ii) Acidity, total suspended and dissolved solids and other important water quality parameters of local impact,
  iii) Flooding or stream-flow alteration, ground water and surface water availability.

1)

a) The proposed longwall mining operation should have no impacts on the contents of total suspended solids, dissolved solids, acidity, or pH. Some of the wells located within the proposed permit area may exhibit increases in iron, manganese, and hardness post-mining operation. Some springs within the proposed mining permit may exhibit increased iron, manganese, and hardness post-mining. These increases are typically temporary and do not persist for a period longer than one year. The quality of the surface and ground water in the application area is not expected to be altered long term as a result of the proposed mining activities. The levels of pH, iron, manganese, total suspended solids, and total dissolved solids are not expected to vary from the levels indicated in the submitted hydrologic inventory. However, these levels may temporarily be altered during post mining.

b) Aquifers in the proposed mining area strata normally have low yields and are less susceptible to mine subsidence fracturing. If fracturing should occur, the fractures will tend to close in response to lithologic pressures or be plugged by fine grain sedimehts containing clay that will swell when exposed to water. There is also vertical and horizontal variability in the rock strata. Rapid facies and hydrologic property changes limit the horizontal continuity of individual rock units. With the exception of persistent coal seams, few lithologic units are continuous across the proposed permit area. All of these factors tend to enhance the importance of localized flow systems. Most available ground water in this region is limited to the first 100' of the surface where enhanced permeability associated with rock fracturing is present. Ground water recharge in the upper ridge and ridge top areas of the site result in downward water migration within this shallow saturated zone. Due to topographic relief exceeding 100 feet between ridge tops, localized flow systems under the ridge tops are not hydrologically connected with adjacent ridge tops. Ground water under any ridge top can be considered continuous, but not across to other ridge tops. The overall hydrologic regime may be affected and some individual sources of water may be permanently disrupted and require replacement. Should a supply become affected by the mining operation, the supply will be appropriately supplemented by American Energy Corp. at the company's expense by connecting the water user to a temporary water supply such as portable water tank until it is deduced that the original water supply has been permanently lost. If permanent loss is verified the water user will then at the company's expense be connected to a permanent source such as an available public water supply. Should a supply become affected by the mining operation, the supply will be supplemented by American Energy Corp. at the company's expense by connecting the water user to another water supply.

Some changes in general water table levels and repositioning of hillside springs may result. Static water levels of ground water users in the proposed permit area may be affected. Many ground water supplies are permanently disrupted and therefore require replacement. Based on water bearing strata located in the test holes and field observations and sampling of developed water supplies, several aquifer zones have been identified and estimated in the proposed permit area. These aquifer zones can be located in the Ground Water Description in Part 2 Section C.

c)

(i) No impact to sediment yield will occur as a result of the proposed longwall mining operation.

(ii) The effect on acidity, total suspended and dissolved solids, and other important water quality parameters of local impact will not be significantly affected by longwall operations and are expected to still meet effluent limitations.

(iii) The proposed underground longwall mining operation will have no impact on flooding. It is expected that water flow in streams where overburden exceeds 200 feet, may be temporarily reduced, but are expected to recover with periodic storm events. Due to the local geology, as described in the geologic description in Part 2 Item B, any stream loss will not drain into the mine workings. It is our experience that any stream loss over the shadow area reappears downstream of the shadow area.

(2) Describe the measures to be taken during and after the proposed underground mining operations to minimize disturbance to the hydrologic balance, including quality and quantity, within the permit and adjacent areas, to avoid acid or toxic drainage, and to prevent material damage outside the permit area.

Please refer to Part 3 Item C(2) attached as an addendum to this item.

(3) Identify the extent to which the proposed underground mining operations, including subsidence impacts, may proximately result in contamination, diminution or interruption of an underground or surface supply of water within the proposed shadow area and adjacent areas which is used for domestic, agricultural, industrial or other legitimate use. If contamination, diminution or interruption may result, provide a description of alternative sources of water which could be developed to replace existing sources including information on water availability and suitability of alternative water sources for existing pre-mining uses and approved post-mining land uses. Furthermore, address the protection of the rights of present users of surface and ground water.

Please refer to Part 3 Item C(2) attached as an addendum to this item.

(4) Is the application within 1,000 feet of an Ohio Source Water Protection Area? Yes ☐ No ☒ If "yes," indicate the name of the protection area. Describe activities that are potentially harmful to public water supplies and address mitigation of, and alternatives, to such activities. Identify the protection area on the Hydrology Map.

See Addendum to Part 3, C(4)

D. GROUND WATER AND SURFACE WATER MONITORING PLAN

Based upon the probable hydrologic consequences determination and analysis of all baseline hydrologic, geologic and other information submitted in this application, describe the plan for collection, recording and reporting of all surface and ground water quality and quantity monitoring data, including data collected for the NPDES program.

See Addendum to Part 3, Item D

ADDENDUM TO PART 3, ITEM C(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425-16

ALTERNATIVE WATER SUPPLY INFORMATION

1. INTRODUCTION

AEC will comply with all legal requirements when required to effect water replacement per ORC 1513.162 AND OAC 1501:13-9-04 (P). Notwithstanding its mining rights and without waiving any of its mining rights, where such diminution or interruption results from its mining, American Energy Corporation will repair or install a replacement source in the adjacent area to a level sufficient to meet the pre-mining quantity and quality levels of a legitimate water supply which will be determined by monitoring information gathered in accordance with the Monitoring Plan.

The Probable Hydrologic Consequences (PHC) narratives contained in response to Part 3, C(1) of this application indicate a potential for diminution and/or interruption of ground water and surface water supplies in areas above and contiguous to full recovery mining operations. Past experience indicates that the majority of subsidence (that detectable with surveying equipment) is complete within about 10-14 days after the longwall passes under the area. Water losses generally occur within that time period.

No long-term contamination of such water supplies is expected; however, short-term quality impacts are possible, as addressed in the PHC narratives. Nevertheless, if the Division finds that mining has resulted in contamination of any used, legitimately water supply, it will be replaced in the manner set forth below.

Refer to the Ground Water Inventory for identification of sites that may experience diminution as a result of subsidence caused longwall mining, which are denoted by a "(+)" as shown in the footnotes at the bottom of the inventory. Note that the only used supply at risk is W-68.00, which is located within the full coal recovery shadow area. Insofar as this well is owned by the permit applicant, water replacement should pose no problem.

2. NOTIFICATION OF IMPACT BY COMPLAINANT

If a water user believes that his or her underground or surface water source has been contaminated, diminished, or interrupted as a proximate result of the mine's operation, he or she should notify the Division's appropriate district office or AEC by calling (614) 926-9152. AEC will make a determination of liability no later than sixty (60) days after notification of the contamination, diminution, or interruption of a water supply as a proximate result of the mine's operation.

3. NOTIFICATION OF IMPACT BY OPERATOR

AEC will notify the Division of all received water complaints and detailed responses to those complaints. In particular, dates and methods of repair and/or replacement will also be provided. If AEC plugs a well, it will send the Division a copy of the sealing report filed with ODNR – Division of Water. If AEC drills a well, it will submit a copy of the drilling report filed with ODNR – Division of Water to the Division, and a completed Hydrologic Analysis from a one-time sample, and address the monitoring of this well, if applicable.

ADDENDUM TO PART 3, ITEM C(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425-16

4. TEMPORARY WATER SUPPLY

At its own expense AEC will install an alternate water supply system to be used until repair or replacement is completed or will reimburse the water user for the reasonable cost of obtaining a water supply from the date of any such contamination, diminution, or interruption until the supply is repaired or replaced. Work on installing a temporary alternate water supply will be complete within 48 hours after AEC learns of the contamination, diminution, or interruption to a legitimately-used water supply proximately caused by the mining operation. In cases where temporary water cannot be provided within 48 hours, AEC will immediately notify the Chief of the Division of Mineral Resources Management who will determine if the circumstances warrant an extension of the 48 hours.

5. DETERMINATION OF IMPACT

AEC will make a determination of liability no later than sixty (60) days after notification of the contamination, diminution, or interruption of a water supply as a proximate result of the mine's operation. As an option, AEC may defer to the Division to make such determination.

6. PERMANENT SUPPLY OPTIONS

AEC will provide the affected water user with no less of an available water supply than the water user had before mining, based on the pre-mining measurements and analyses. In some cases, AEC reaches pre-subsidence agreements with water users, who are normally represented by counsel and in all cases, have full opportunity to consult with counsel or anyone else of their choosing. These agreements, which are typically negotiated by AEC employees, normally cover all potential damage claims. In situations where such an agreement is reached, AEC intends to comply with the water replacement terms contained in the agreement. Such an agreement will satisfy, at a minimum, this permit and ORC 1513.162.

In repairing or replacing a water user's ground or surface water supply system used for domestic use which is damaged as a proximate result of the mine's operation, AEC's first preference is to repair the affected supply system. If that is neither effective nor feasible, AEC's second preference is to replace the affected supply system with a like supply system.

As stated in the previously-referenced PHC narratives, the elevation of alternative water sources is unpredictable until the water system in the area again attains equilibrium after mining. Therefore, the alternative water supplies to be developed will be selected on a case-by-case, site-specific basis from among the options in the following list when the need arises:

1. Repair damaged cisterns after AEC has determined that subsidence is complete by grouting the cistern or by replacing it;

2. On a site-specific basis, re-drill existing wells, drill new wells, or connect the water user to public water supplies. Switzer Water Association has existing water lines on CR86 and part of Twp Roads 104 and 108 within the application

area and is currently serving approximately 17 occupied structures therein. There are less than ten occupied structures within the application area that are not on the system but could be connected to the existing public water system for interim or permanent water replacement. Ohio Valley Coal Company and AEC have drilled a number of successful replacement wells over the years for both domestic and agricultural replacements. Some of AEC's replacements are listed in the attached Addendum.

3. On a site specific basis, developed springs will be replaced by a farm pond built according to accepted engineering practices, drilling of a new well, development of another spring in close proximity to the original spring, if viable, or connect the water user to public water.

4. Repair damaged farm ponds so as to be comparable to their pre-mining conditions. This has been successfully accomplished on Warner Moore's property that had an abandoned gas well in the pond. When the mining went through, it drained the pond. OVCC put clay in the bottom of the pond and stopped the leak. There was a pond that was repaired in the 30 West panel that was also successfully repaired.

5. Install an interim water supply until affected water supplies are replaced. Interim supplies may include hauled water or a tap to public water. AEC will only install temporary, replacement water using a public water supply if it can be connected within 48 hours. AEC routinely uses a certified water hauler to haul county water for temporary replacement supplies. This practice is expected to continue. The local fire department can haul water within a matter of hours after receiving a request. Temporary tanks and water troughs for livestock are kept in stock to facilitate quick installations. AEC will pay for interim water bills.

6. Such other proven, cost effective, and reasonable techniques as AEC may now, or in the future, deem appropriate.

Permanent replacement, repair or the installation of a replacement water supply for an affected water supply shall be completed after it has been determined that the supply has been contaminated, diminished, or interrupted as a proximate result of the operator's mining operation.
Those supplies may include, but not be limited to, re-development of an existing well, spring, or pond, or replacement of the source with the County Water System. Other supplies include wells or springs. AEC has drilled wells and developed springs over longwall-mined areas successfully.

7. PAYMENT

ADDENDUM TO PART 3, ITEM C(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425-16

If contamination, diminution, or interruption of a legitimately-used ground or surface water supply occurs as a proximate result of the mine's operation, AEC will repair such water supply or install a replacement supply at its own expense. This pertains to both interim and permanent water supply replacement.

AEC, in the past, has always attempted to consult and negotiate with the affected water user concerning the selection of the type of water replacement system and its site. This is done at the request of water users who prefer this procedure to that of AEC making unilateral decisions about replacement supplies and sites.

8. APPEALS

In any situation where AEC determines that the contamination, diminution, or interruption of a legitimate water supply was not proximately caused by the mining operation, based on evidence such as the proximity of the supply to the mining operation, site specific geologic and surface conditions, or climatological conditions, AEC will provide the water user and the Division of Mineral Resources Management with notice of its determination and the proof in support of that determination to allow the Division of Mineral Resources Management to issue a Chief's Order deciding the issue. This Chief's Order is then appealable in accordance with O.R.C. §1513.13. The water user's water supply system will continue in operation during the time AEC seeks review of this matter pursuant to O.R.C. §1513.13, unless the Reclamation Commission grants temporary relief. Furthermore, AEC will provide a temporary water supply pending an appeal filed by the complainant in response to a determination that mining did not cause the adverse impact to the water supply.

ADDENDUM TO PART 3, ITEM C(2)
AMERICAN ENERGY CORPORATION
CENTURY MINE
PERMIT D-0425-16

ALTERNATIVE WATER SUPPLY – SUPPORTING DOCUMENTATION

SURFACE OWNER	COUNTY	TOWNSHIP	OPERATOR	SMA PERMIT	REPLACEMENT	COMMENT	LOG #
Butler, Charles	Belmont	Wayne	AEC	D-0425	Well	Replace well for domestic use	2008050
Crooks, Roger	Belmont	Sunsbury	AEC	D-0425	Well	Replace agricultural supply	2014868
Vest, Walter (Buckthorn Club)	Belmont	Washington	AEC	D-0425	Well	Replace well for domestic use	2001884
Butler, Charles	Belmont	Wayne	AEC	D-0425	Well	Replace agricultural supply	2009586
Davis, Judith	Belmont	Washington	AEC	D-0425	Well	Replace well for domestic use	2010789
Dornan, Don	Belmont	Sunsbury	AEC	D-0425	Well	Replace agricultural supply	2018645
Elrod, Dave	Belmont	Washington	AEC	D-0425	Well	Replace well for domestic use	2013154
Bondy, John	Belmont	Washington	AEC	D-0425	Well	Replace well for domestic use	2003706
Cox, Jeff	Belmont	Sunsbury	AEC	D-0425	Well	Replace well for domestic use	2018644
Boan, Lucy	Belmont	Wayne	AEC	D-0425	Well	Replace well for domestic use	2001883
Bondy, Clyde	Belmont	Washington	AEC	D-0425	Well	Replace well for domestic use	2003703
Crooks, Roger	Belmont	Sunsbury	AEC	D-0425	Pond	Replace agricultural supply	N/A

ADDENDUM TO PART 3, ITEM C (3)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

Anticipated Effects on Century Mine by Adjacent Abandoned Mines

Attached are exhibits of surveyed plans of the existing adjacent abandoned mines, Allison Mine, BT-270, and ME-004. The key shows labeled areas with dimensions of the existing barriers. Presently, The Allison Mine is largely dry. Saturation of BT-270, and ME-004 are unknown, however these are largely down dip of Century Mine. The Century Mine has not experienced any water intrusion from these adjacent mines.

Furthermore, the exhibit showing the separation barrier at the closest point of the Allison Mine, on the south from D-360, Powhatan #6 Mine on the north is 153'. A calculated minimum safe barrier distance to prevent hydraulic connectivity is approximately 90' as shown by the Ashley Formula included herewith.

AMERICAN ENERGY CORP.
ADDENDUM PART 3, C(3)
APPLICATION D-0425-16
BARRIER PILLAR CALCULATION

WIDTH OF BARRIER PILLAR = 20+4t+.1D (MINING ENGINEERING HANDBOOK)
WHERE t = SEAM HEIGHT; D=OVERBURDEN (OR HYDROSTATIC HEAD
POSSIBLE IF GREATERTHAN VERTICAL THICKNESS OF OVERBURDEN
t=5.2 ft

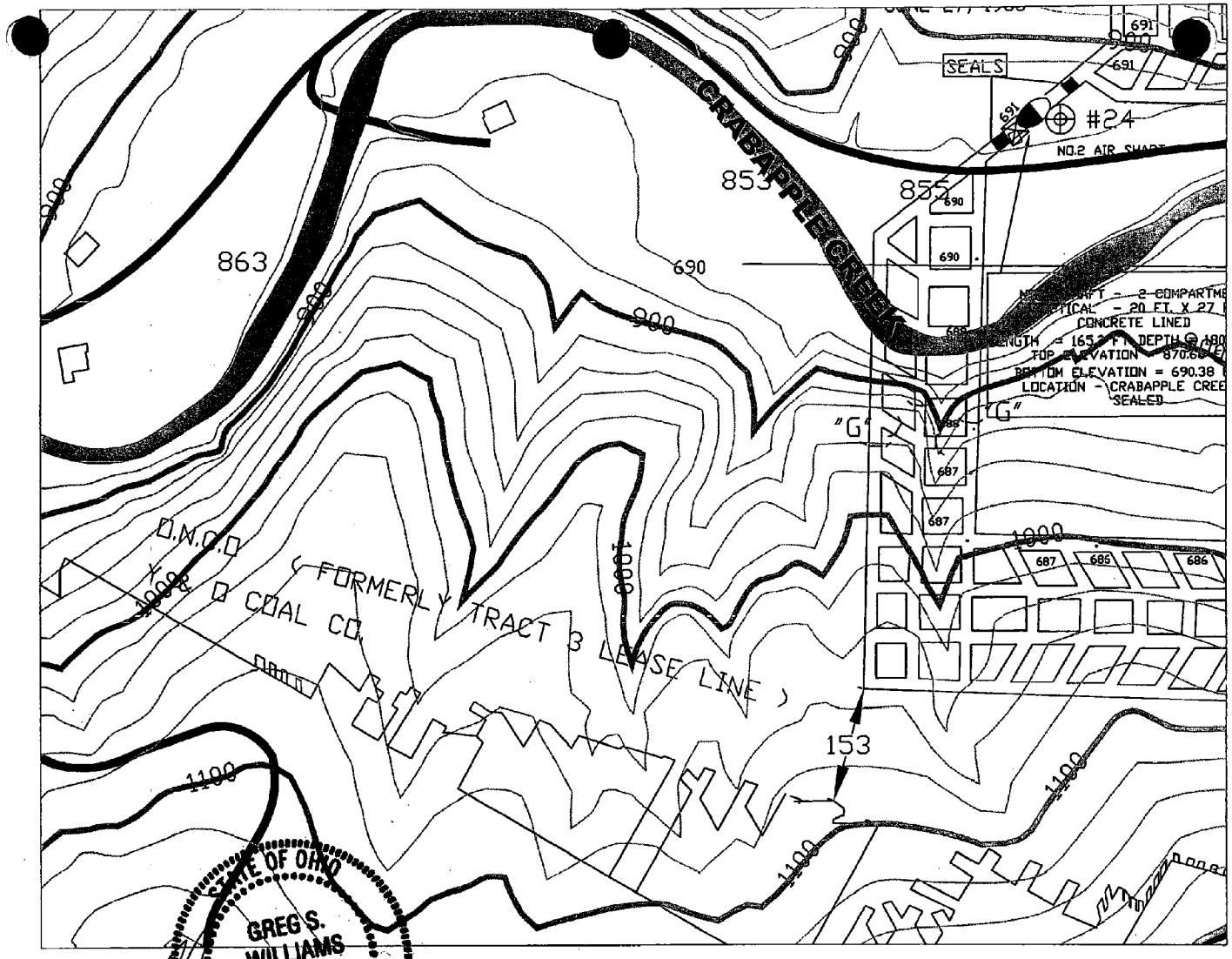
CALCULATION FOR W BASED
ON ELEVATION:

	C ELEV (FT-MSL)	S. ELEV (FT-MSL)	COVER (FT)	MINED W (FT)	t (FT)	MIN W (FT)	
NO. 6	687	1050	363	153	5.2	77.1	
ALLISON	684	1090	406	153	5.2	81.4	
AVG			384.5	153	5.2	79.25	SAFETY FACTOR 1.9 MINED W/MINIMUM WIDTH

ASSUME NO. 6 MINE ENTIRELY FLOODED
LOWEST ELEVATION 687 FT MSL
HIGHEST ELEVATION 955 FT MSL
ELEVATION DIFFERENCE 268 FT HYDROSTATIC HEAD
HYDROSTATIC HEAD IS NOT GREATER THAN VERTICAL
THICKNESS OF OVERBURDEN.

3/7/17
OHIO PROFESSIONAL ENGINEER

STATE OF OHIO
GREG S. WILLIAMS
E-57998
REGISTERED PROFESSIONAL ENGINEER



STATE OF OHIO
GREG S. WILLIAMS
E-57998
REGISTERED PROFESSIONAL ENGINEER

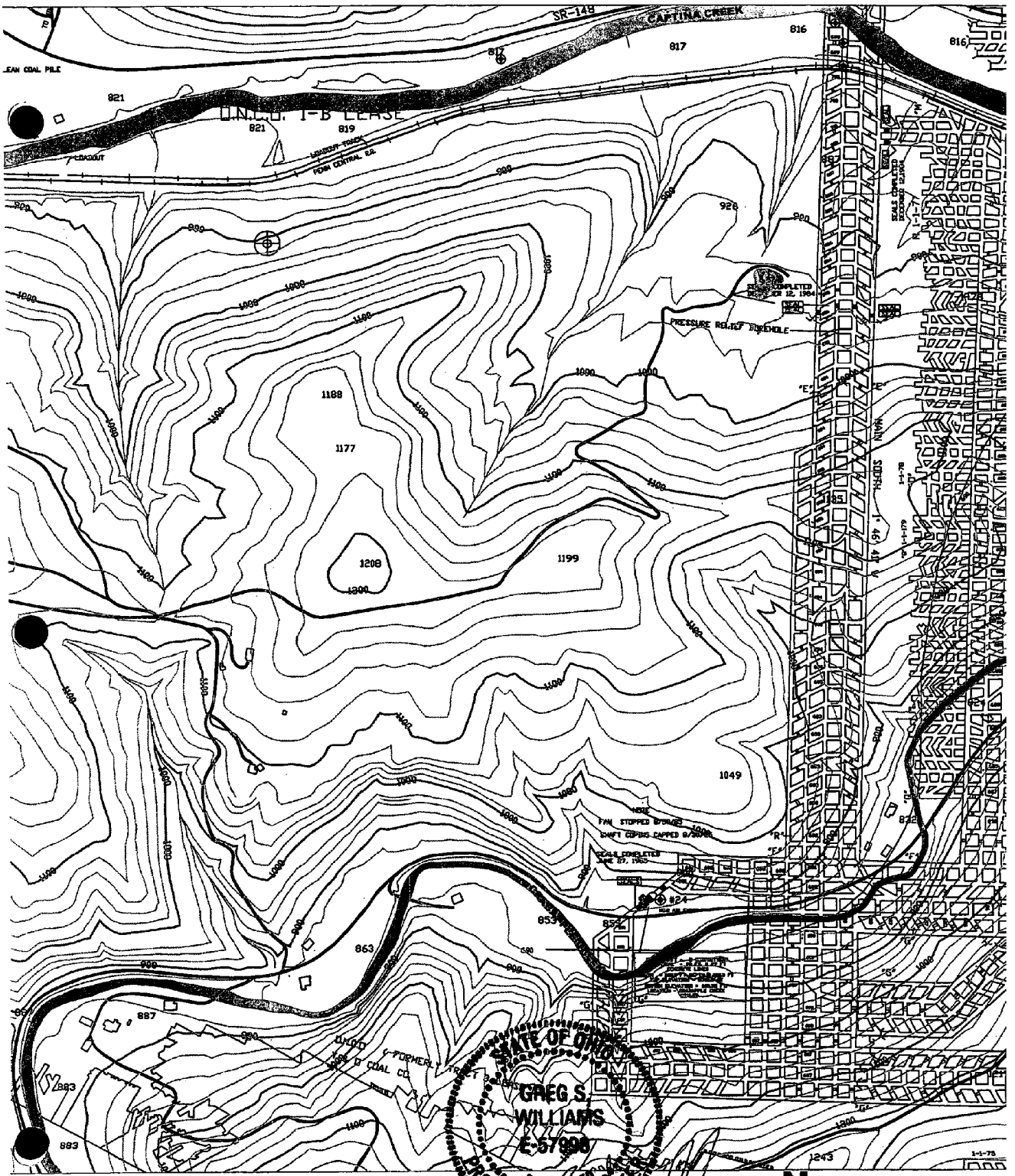
3/7/11

ADDENDUM TO PART 3, C(3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
BARRIER BETWEEN NO. 6 MINE AND ALLISON MINE
SCALE: 1" = 200'

N

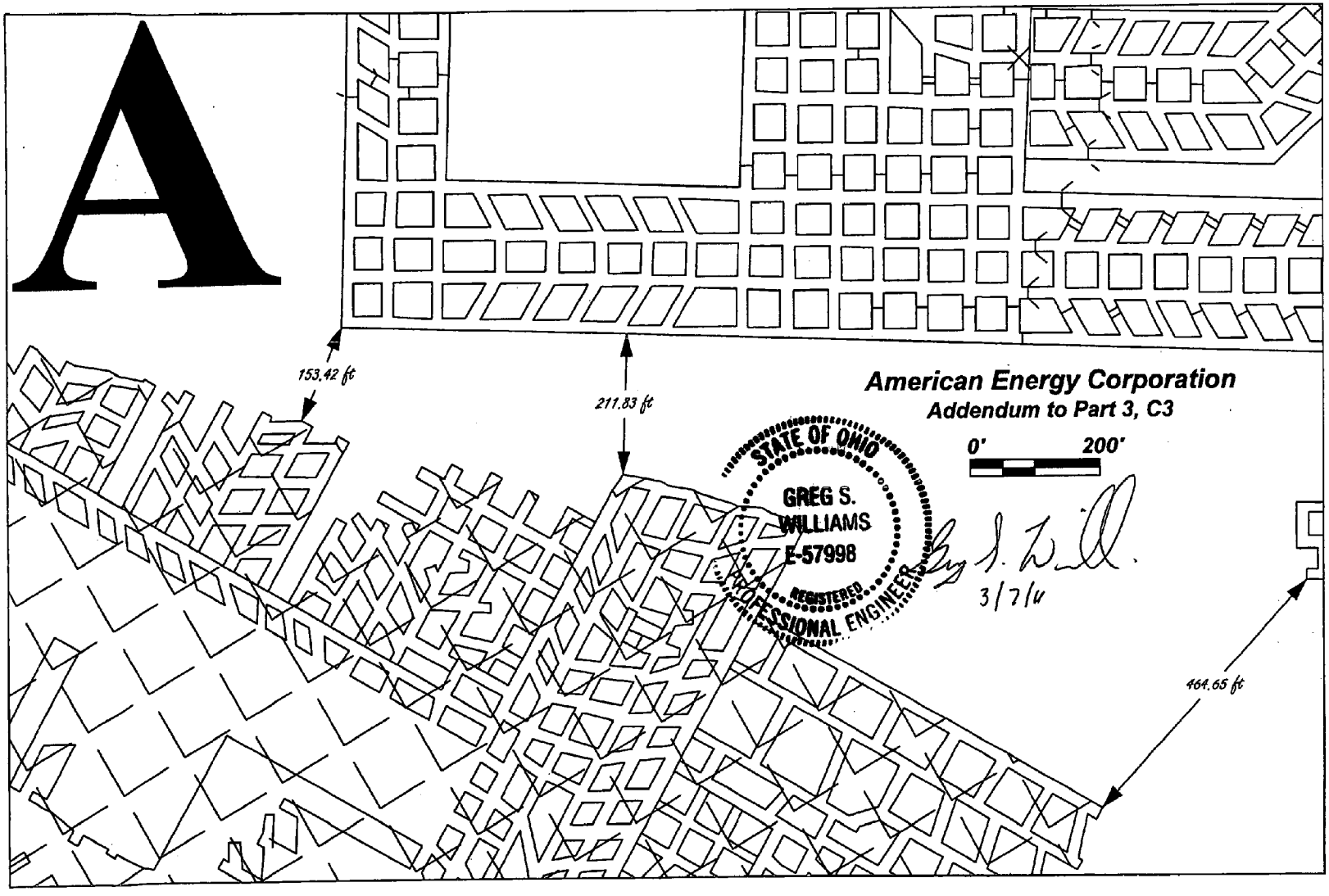
0' 200' 400' 600

AEC 09492

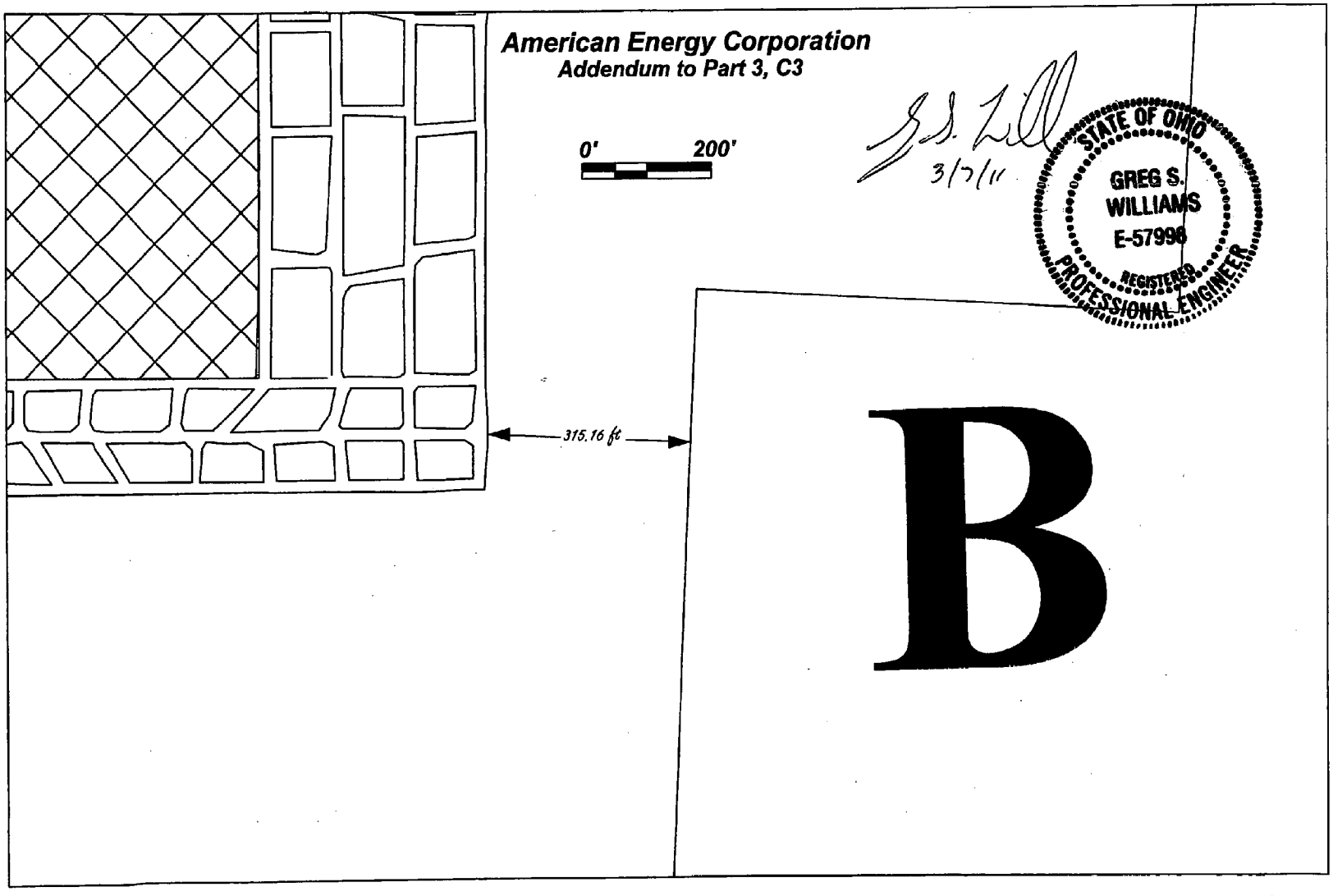


ADDENDUM TO PART 3, C(3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
BARRIER BETWEEN NO. 6 MINE AND ALLISON MINE
SCALE: 1" = 500'

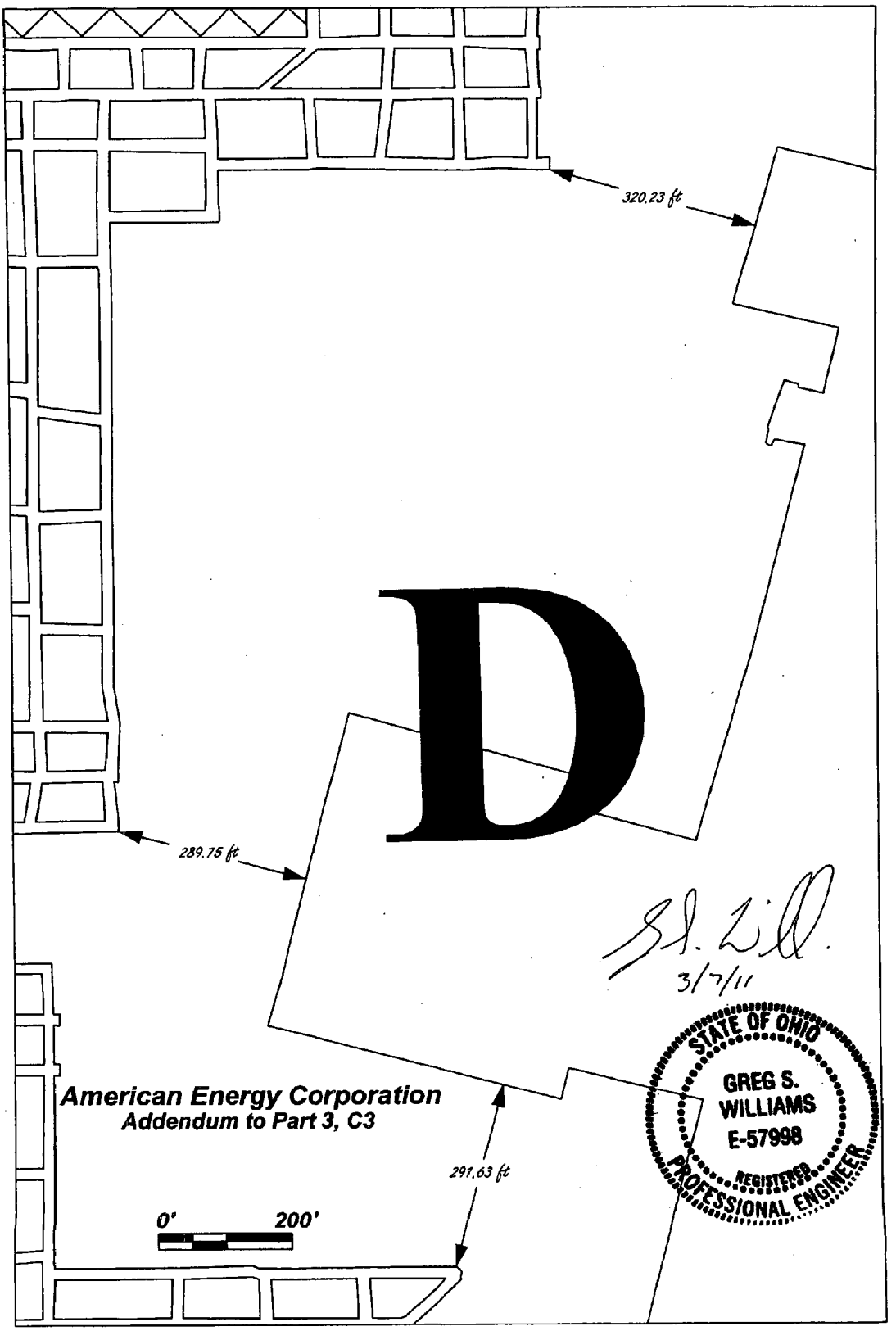
AEC 09493

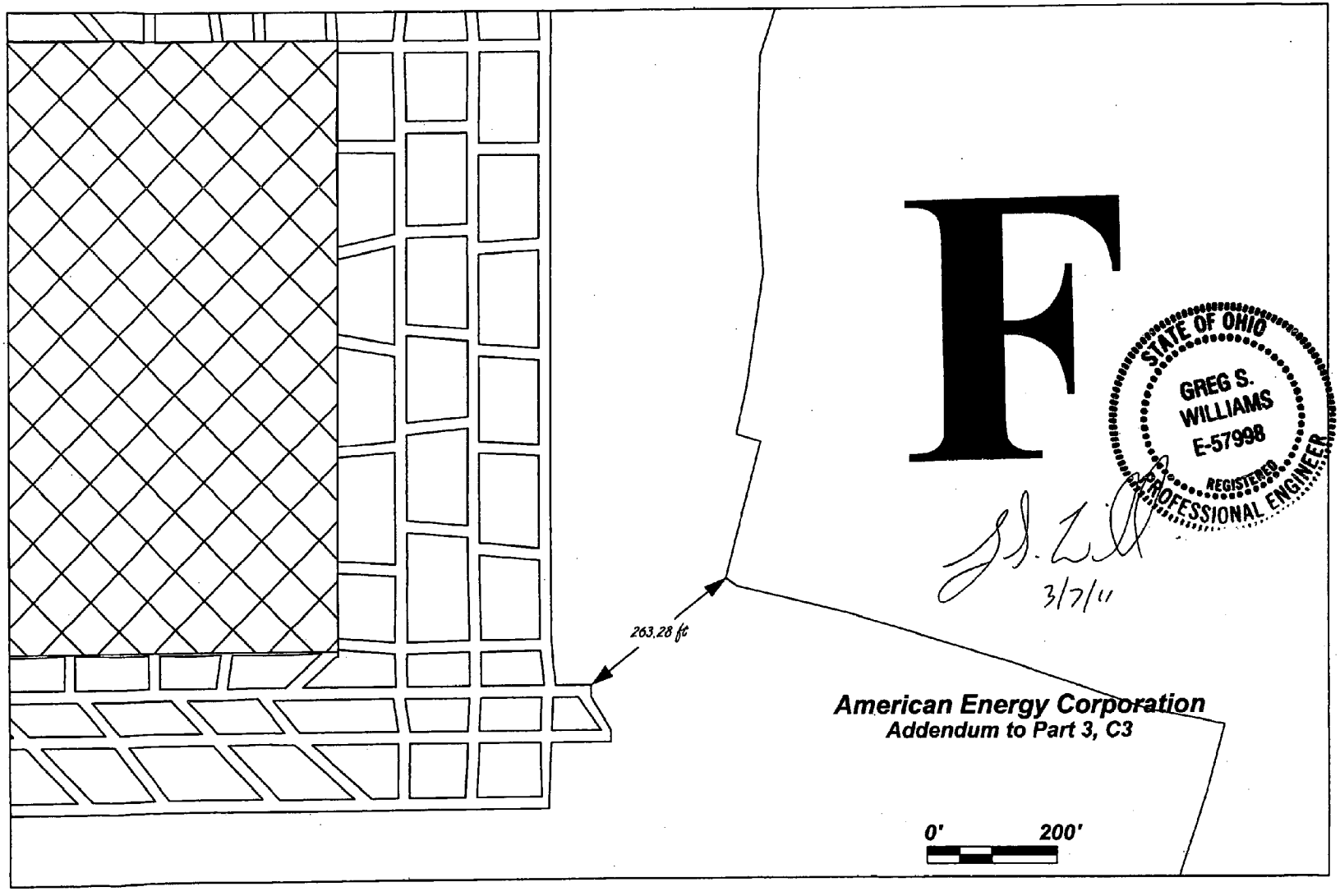

A
153.42 ft
211.83 ft
American Energy Corporation
Addendum to Part 3, C3
0'
200'
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER
3/7/11
464.65 ft

AEC 09494

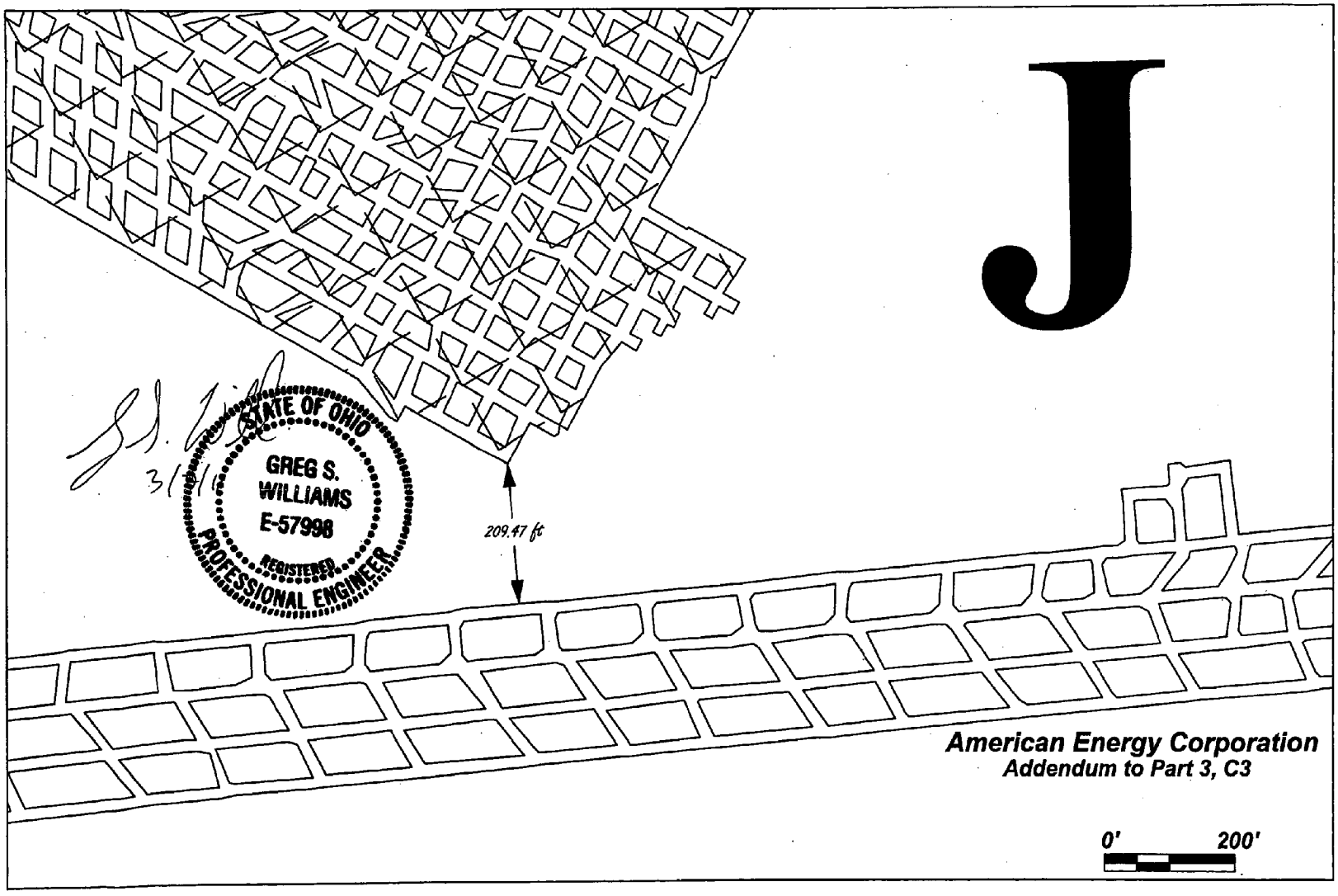

American Energy Corporation
Addendum to Part 3, C3
0'
200'
3/7/11
STATE OF OHIO
GREG S. WILLIAMS
E-57998
REGISTERED PROFESSIONAL ENGINEER
315.16 ft
B

AEC 09495


320.23 ft
D
289.75 ft
3/7/11
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER
American Energy Corporation
Addendum to Part 3, C3
291.63 ft
0'
200'

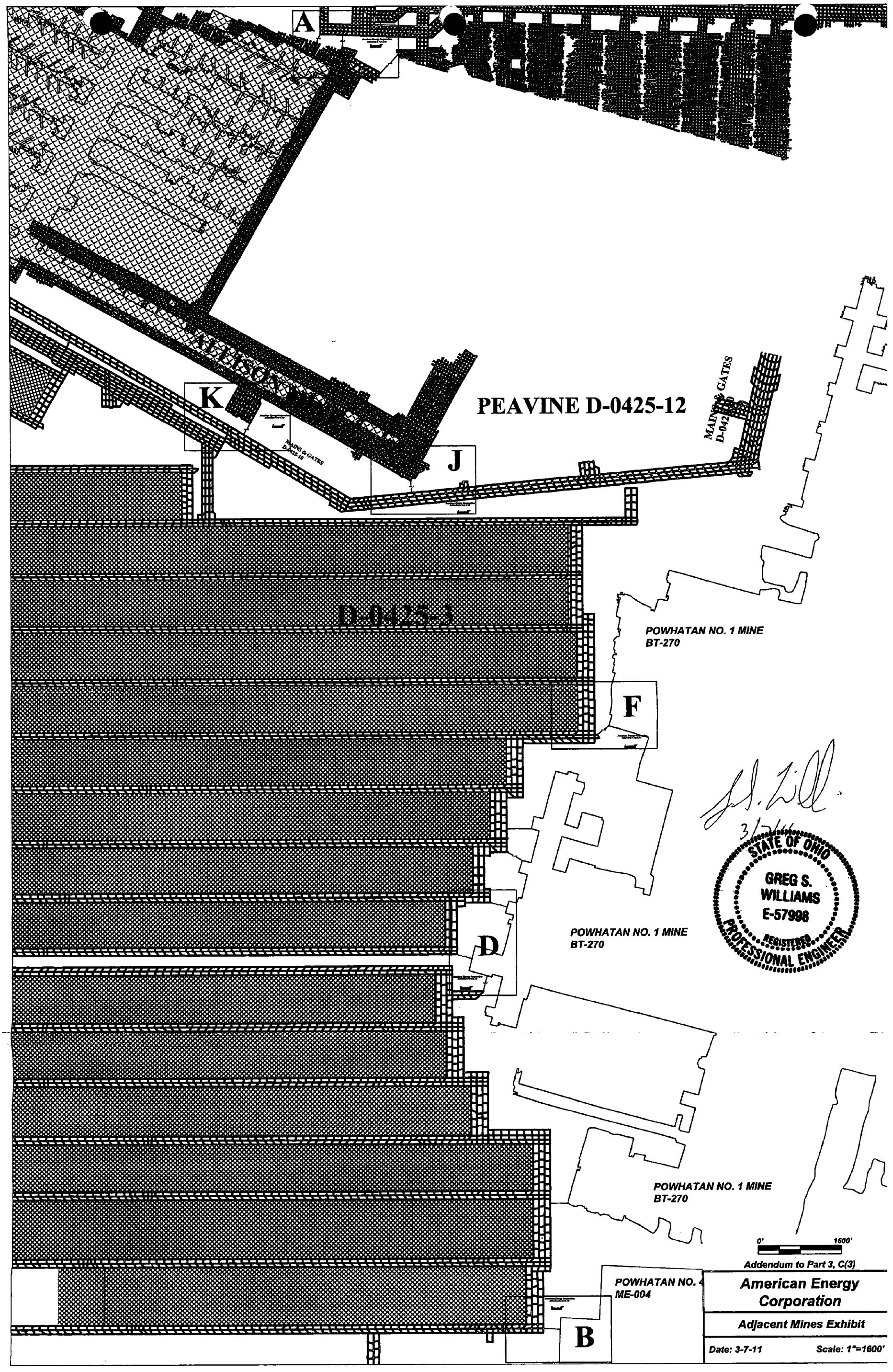

F
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER
3/7/11
263.28 ft
American Energy Corporation
Addendum to Part 3, C3
0'
200'

AEC 09497


J
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER
209.47 ft
American Energy Corporation
Addendum to Part 3, C3
0'
200'

AEC 09498

American Energy Corporation
Addendum to Part 3, C3
0'
200'
228.56 ft
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER


A
K
J
D-0425-3
F
D
B
PEAVINE D-0425-12
MAINS & GATES
D-0425-10
POWHATAN NO. 1 MINE
BT-270
POWHATAN NO. 1 MINE
BT-270
POWHATAN NO. 1 MINE
BT-270
POWHATAN NO. 4
ME-004
STATE OF OHIO
GREG S.
WILLIAMS
E-57998
REGISTERED
PROFESSIONAL ENGINEER
3/7/11
0'
1600'
Addendum to Part 3, C(3)
American Energy
Corporation
Adjacent Mines Exhibit
Date: 3-7-11
Scale: 1"=1600'

AEC 09500

Public Water System Wells, Intakes and Drinking Water Source Protection Areas near the Proposed Murray Energy Project Area

Scale 0 1,000 2,000 4,000 Feet
0 0.25 0.5 1 Mile

EXPLANATION

Public Water System Intake
Public Water System Well
Approximate Area Covered in Application

Drinking Water Source Protection Areas - Ground Water

Protection Area (Outer line = 5-year time-of-travel)
Inner Management Zone (Inner line = 1-year time-of-travel)

Drinking Water Source Protection Areas - Surface Water

Corridor Management Zone
Emergency Management Zone
Zone of Critical Concern (Ohio River systems only)
Critical Assessment Zone (Lake Erie systems only)
Potential Influence Zone (Lake Erie systems only)

Label text reflects system type as defined in Chapter 3745-81-01 of the Ohio Administrative Code as noted below.

Community Water System | Non-Transient, Non-Community Water System | *Transient, Non-Community Water System*

Base Maps:
Armstrongs Mills 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey
Cameron 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters

Map created on January 18, 2011

ADDENDUM TO PART 3, ITEM D
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

GROUND AND SURFACE WATER MONITORING

1. Ground Water Monitoring Plan

All legitimately used ground water and surface water supplies have been identified in the Ground Water and Surface Water Inventories, respectively. These used supplies will be monitored quarterly for quality and monthly for quantity for at least one year prior to full recovery mining, and at least one year subsequent to mining contingent upon review by the Division of Mineral Resources management, unless access is denied by the land owner. Quarterly Monitoring Reports and Daily precipitation data will be submitted to the appropriate District office no later than 14 days after the end of the quarter.

2. Surface Water Monitoring Plan

Stream stations upstream and downstream of the shadow area as depicted on the application/ hydrology map will be sampled monthly for flow and quarterly for quality. The quality requirements of OAC 1501:13-4-13(E)(2) and the other QMR parameters as stated on the Underground Mining-Shadow Area-Water Monitoring Report (see attached addendum to this item) will apply to the surface water analysis. Each surface monitoring station will be monitored for at least one year prior to, and continuing for one year after underground mining. At a minimum, the following stream stations will be monitored: U-1A, U-2A, U-10, D-10, U-11, D-11, U-12, D-1, D-2, D-12, U-13, and D-13. None of the ponds will be monitored, as none are in use.

Ground and Surface water supplies and stream sampling stations located within 500 feet (measured horizontally) of the perimeter of the active longwall panel will be monitored as if they were located on the panel. Monitoring will be continued for at least one year subsequent to full recovery mining contingent upon review by the Division of Mineral Resources Management. Daily precipitation data will be submitted quarterly to evaluate spring, stream, and pond flow.

If pre-mining condition is not restored naturally by the end of the five year monitoring period mitigation/remediation efforts will begin subsequent to the approval of an ARP submitted for this express purpose.

With each quarterly monitoring report of ground and surface water, a map depicting the progression of the longwall face will be attached to indicate the sampling points in the full recovery areas. Notes will be submitted indicating the position relative to the longwall face, with "-" indicating the station is in advance of the face and a "+" indicating a position behind the face. An attempt will be made to monitor and sample as outlined above; however, some sources may not be accessible. These locations, if encountered, will be documented in the quarterly reports. If a required monitoring site cannot be sampled and/or measured on the first attempt within the Quarter, a second attempt will be made. All samples will be taken as outlined to the extent that existing well construction allows. Any samples that are unobtainable will be documented as such in the quarterly report.

All developed supplies have been identified and have been indicated on the application/ hydrology map and the Ground Water and Surface Water Inventories.

ADDENDUM TO PART 3, ITEM D

OHIO DEPARTMENT OF NATURAL RES. ...ES - DIVISION OF RECLAMATION
UNDERGROUND MINING - SHADOW AREA - WATER MONITORING REPORT

PERMITTEE_____PERMIT NO._____SITE I.D._____ SURF. ELEV._____QUARTER (1-4) __
YEAR____ DATE UNDERMINED_____ COAL ELEV._____ WELL DEPTH(ELEV.)_____

Dated Measured													
Static Water Level (Elev.)													
Stream/Spring Discharge (CFS or GPM)													
Face Location (Advancing -, Retreating +)													
Site Location*													
Total Acidity (mg/l $CaCo_3$)													
Total Iron (mg/l)													
Total Manganese (mg/l)													
Total Suspended Solids (mg/l)													
Total Hardness (mg/l $CaCo_3$)													
Total Sulfates (mg/l)													
Specific Conductance (at 25°C in umhos/cm)													
Total Dissolved Solids (mg/l)													
pH (Standard Units)													
Total Alkalinity (mg/l $CaCO_3$)													
Nitrate - No_3 (mg/l)													

*PAN = ABOVE PANEL GTE = ABOVE GATE ADJ = WITHIN 500' OF PANEL

PERMITTEE'S SIGNATURE_____
LABORATORY NAME _____ Date _____
ANALYST'S SIGNATURE _____ DATE _____ PAGE NO._____

AEC 09503

ADDENDUM TO PART 3, ITEM D

1/93

OHIO DEPARTMENT OF NATURAL RESOURCES - DIVISION OF RECLAMATION
UNDERGROUND MINING - REQUEST TO CEASE MONITORING

PERMITTEE_____ PERMIT NO. _____

DATE MONITORING TO BE CEASED _____

SITE ID	DATE UNDERMINED	UTILIZED SUPPLY	IMPACTED	RECOVERED	COMMENTS	DOR APPROVAL

Date Received _____ Date Reviewed _____ Division Hydrologist _____

TO THE OPERATOR: THE SITES MARKED "YES" IN THE DOR APPROVAL COLUMN NO LONGER NEED TO BE MONITORED. ANY REMAINING SITES MUST CONTINUE TO BE MONITORED FOR AN ADDITIONAL TWELVE (12) MONTHS. THIS DECISION IS SUBJECT TO REVIEW PURSUANT TO ORC 1513.13.

AEC 09504

E. COAL MINING NEAR UNDERGROUND MINES

(1) Will mining operations within this application area be conducted within five hundred feet of an active underground mine or known abandoned underground mine?
Yes ☒ No ☐ If "yes", MSHA approval is required.

(2) If "yes" to item E (1), will the mining operations result in improved resource recovery, abatement of water pollution or elimination of hazards to the health and safety of the public?
Yes ☒ No ☐ If "yes," check appropriate blank.

☒ Resource recovery
☐ Abatement of water pollution
☐ Elimination of hazards

(3) Provide documentation that the remaining barrier will be sufficient to prevent failure with respect to the level of flooding in the adjacent underground mine.

U.S. Department of Labor

Mine Safety and Health Administration
604 Cheat Road
Morgantown, West Virginia 26508

FEB 11 2011

Richard L. Leasure
Safety Director
American Energy Corporation
43521 Mayhugh Hill Road,
Beallsville, OH 43716

Dear Mr. Leasure:

The Mine Safety and Health Administration (MSHA) has reviewed the State of Ohio Application Number D-0425-16 from the Ohio Department of Natural Resources, Division of Mineral Resources Management, and concurs with this surface application. The coal mining application for American Energy Corporation, Century Mine, MSHA I.D. No. 33-01070, indicates the proposed mining operations will be within 500 feet of an underground mine. MSHA reviews these applications with the Ohio Department of Natural Resources under Public Law 95-87, Surface Mining Control and Reclamation Act of 1977. Additionally, MSHA has regulations in place which cover underground mining within 500 feet of underground abandoned or active mines (30 CFR 75.1200 & 75.388). Based on submission of 75.372 maps, additional information may be required in the appropriate ventilation or roof-control plans for the Century Mine.

Any surface mining activity will require the submittal and acknowledgement of a ground-control plan. The safety precautions associated with mining within 500 feet of abandoned or active underground mine workings along with mining close to gas wells and gas lines will need to be addressed in the plan. If appropriate, please revise as necessary and re-submit the application.

If you have any questions or wish to discuss this matter, please contact the Impoundment Group at 304-225-6855.

Sincerely,

Bob E. Cornett
District Manager

cc: Ohio Department of Natural Resources,
Division of Mineral Resources Management

WILLIAM J. SIPLIVY, P.E., INC.

Geotechnical Engineer

28 September 2010

American Energy Corporation
ODNR Application D-0425-16
Part 3, E(3)

A 200 foot wide barrier pillar is projected to separate the D-0425-16 Application area from the adjacent north Powhatan No. 6 mine. The potential hydraulic head is approximately 50 feet. This occurs from the No. 1 portal shaft at elevation 705 feet, msl to its lowest elevation of 655 feet along the northern boundary of D-0425-16. The maximum cover in the study area is 620 feet.

The 200 foot wide barrier pillar is used here to comply with MSHA regulation 75.1701 for mining adjacent to abandoned mines.

A calculation is made using the Ashley or Mine Inspectors' formula to further test the adequacy of the projected 200 foot wide barrier pillar. The results are as follows:

$$W = 20 + 4T + 0.1D$$

Where: T = coal thickness. Use 5.2 feet.
D = thickness of overburden or, if water is involved, the height of the hydrostatic head possible if it is greater than the vertical thickness of the overburden. Since the hydrostatic head (50 feet) is less than the overburden thickness (620 feet), use 620 feet.

Required barrier pillar width:

$$W = 20 + 4(5.2) + 0.1(620) = \underline{102.8 \text{ feet.}}$$

This analysis shows the projected 200 foot wide barrier pillar is nearly twice the width needed for the given conditions.

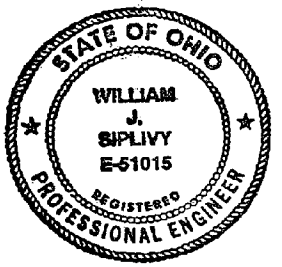
The Ashley or Mine Inspectors' formula was developed in 1930 for coal mining applications in Pennsylvania. Reportedly, the formula has been widely used with success. The formula is found in numerous mining engineering publications, and textbooks. Two references are: (1) C. T. Holland. Mine Pillar Design. SME Mining Engineering Handbook, AIME, New York, 1973, Vol. 1, p. 13-105, and (2) S. S. Peng, Coal Mine Ground Control, John Wiley & Sons, New York, 1978, p. 192.

Respectfully submitted,

Willaim J. Siplivy, P.E., Inc.

William J. Siplivy

William J. Siplivy, P.E., C.P.G.
President



Falls Towne Centre, Suite 104-2 • 2020 Front Street • Cuyahoga Falls, Ohio 44221
330-928-3267 • siplivy@sbcglobal.net

PART 4: UNDERGROUND MINING PLAN

A. SUBSIDENCE CONTROL SURVEY

(1) Is this a full coal recovery operation?

Yes ☒ No ☐ If "yes," complete Pre-Subsidence Inventory and items A (2) and (3).

(2) Does the shadow area contain any of the structures or facilities listed in 1501:13-12-03(J)(1-3)?

Yes ☒ No ☐ If "yes," complete Subsidence Control - Protection of Specific Structures, and specifically identify the structures or facilities on the application map.

(3) Are any aquifers or bodies of water that serve as a significant water source for any public water supply system present in the shadow area?

Yes ☐ No ☒ If "yes," complete Subsidence Control - Protection of Specific Structures, and specifically identify the areas on the application map.

B. SUBSIDENCE CONTROL PLAN

(1) Describe the method of coal removal, and indicates the size, sequence, and timing of the development of the underground workings.

Longwall mining and Room and Pillar mining; see Addendum to Part 4, B(1) Structure Contout, Timing, Coal Parcel map.

(2) Utilizing the application map, specifically indicate areas where planned subsidence mining methods (i.e. longwall or pillar extraction) will be used.

(3) Utilizing the application map, specifically indicate room-and-pillar mining areas where subsidence will be prevented or minimized.

(4) For those areas mapped as room-and-pillar mining, provide the following information:

(a) The maximum and average overburden thickness.

Maximum ~ 620 ft; Average = 520 ft.
The maximum overburden thickness over projected room and pillar workings is estimated to be 620 feet. This occurs in Section 10 in Washington Township, in the vicinity of core hole AEC 2010-18. The measured thickness here from the coalbed base to the surface is 621.7 feet (1276.2-654.5). The thickness from the top of the coalbed to the surface is approximately 615 feet, therefore using 620 feet is appropriate. A stability analysis of projected room and pillar workings was performed by consulting mining engineer William J. Siplivy, P.E., Inc. (Part 4, B(5)(a)(vii). This used the above data and rounded-up to

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

SUBSIDENCE CONTROL – PROTECTION OF SPECIFIC STRUCTURES

Applicant's Name: **American Energy Corporation D-0425-16**

1. List the specific structures, facilities or features to be protected and the corresponding map location key.

   Public Road (Twp Rd 121) and associated culverts within Right-of-Way SEE ADDENDUM TO PART 4, B(5)(d) "Anticipated Effects - Surface Structures: Roads"

2. Is a subsidence control plan being submitted, and does the plan demonstrate that subsidence will not cause material damage or reduce the reasonable foreseeable use of such structures, facilities or features? ☒ Yes, ☐ No

   If "yes," submit the proposed subsidence control plan.

   If "no," answer questions 3 – 7 below.

   Submit documentation the proposed subsidence control plan, or the documentation required by answering questions 3-7 below, has been provided to the public authority responsible for the protected structures, facilities or features. Submit copies of all comments received from the public authority on the required submittal or responses.

3. What is the dimension of the safety zone on the surface that extends beyond the structure to be protected? feet

4. Is the ground surface slope within the protected area greater than 14% or 8 degrees in any direction? ☐ Yes, ☐ No

   If "yes," describe the increased size of the protected area on the downslope side necessary to compensate for this slope.

5. Describe the method for determining the size of the pillar support area at mine level.

6. Indicate the maximum extraction ratio and the minimum safety factor of the coal pillars within the proposed pillar support area.

7. Indicate the long-term strength of the mine roof and the mine floor relative to the strength of the coal seam.

American Energy Corporation

43521 Mayhugh Hill Road
Twp. Hwy. 88
Beallsville, OH 43716
740-926-9152
740-926-9138

November 8, 2010

Clerk, Washington Township
Loretta Goddard
46540 E. Captina Highway
Washington Township, OH 43716

RE: D-0425-16 Proposed Adjacent Permit Area – Subsidence Control Plan

Sir:
Please find enclosed a copy of the proposed permit application map. This shows the extents of proposed underground mining activity. This is to notify you that your agency has jurisdictional public facilities, Twp Road 121, within the proposed area and are shown on the map.

As you may know from experience, longwall mining can cause subsidence of the ground surface. American Energy Corp. (AEC) anticipates little to no impact on these roads. AEC posts bonds for all roads to be undermined. The effect of mining on public roads is typically limited to minor cracking of the pavement or road surface from tension and in a few instances, humping of the surface due to compression. In all instances, the roads have never been closed and repairs have been made by the governing authority and reimbursed by AEC. Roads are inspected frequently during subsidence, and AEC works closely with the governing authority throughout the mining and subsidence.

AEC will notify the Township at least six months prior to undermining its roads. AEC will inspect the areas around roads located on steep areas that could be subject to slippage and will repair surface cracks in these areas immediately if necessary to keep water from causing the soil to slip. In the event that roadways are permanently damaged by subsidence, AEC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.

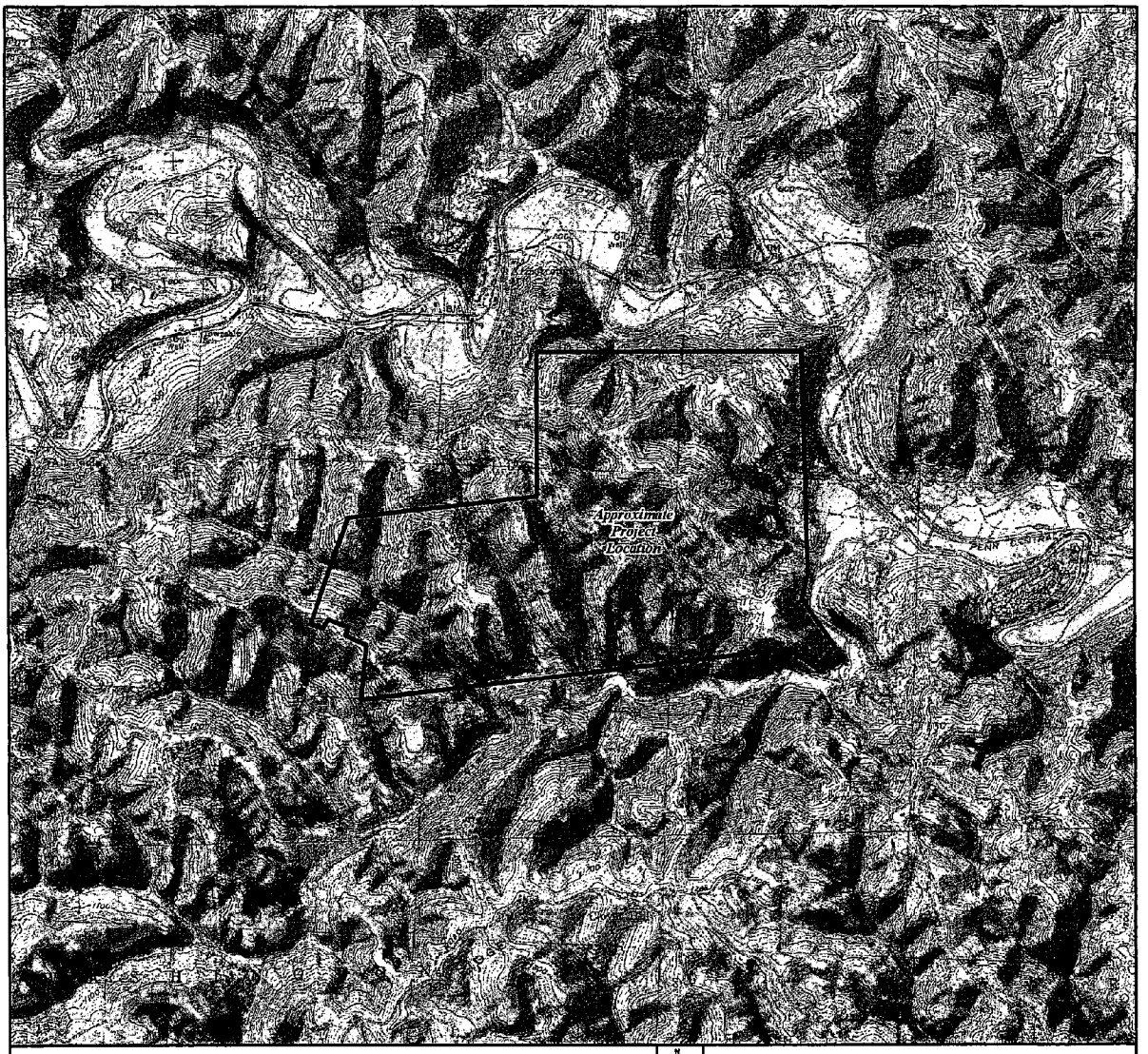
If your agency has any comments or concerns, please forward them to my attention at your earliest convenience. If you have any questions or require additional information, please do not hesitate to contact me at 740/310-2989.

Sincerely,

Greg Williams
Permitting Engineer

Enclosures

CC: file



Public Water System Wells, Intakes and Drinking Water Source Protection Areas near the Proposed Murray Energy Project Area

Scale
0 1,000 2,000 4,000 Feet
0 0.25 0.5 1 Mile

EXPLANATION

Public Water System Intake
Public Water System Well
Approximate Area Covered in Application

Drinking Water Source Protection Areas - Ground Water

Protection Area (Outer line = 5-year time-of-travel)
Inner Management Zone (Inner line = 1-year time-of-travel)

Drinking Water Source Protection Areas - Surface Water

Corridor Management Zone
Emergency Management Zone
Zone of Critical Concern (Ohio River systems only)
Critical Assessment Zone (Lake Erie systems only)
Potential Influence Zone (Lake Erie systems only)

Label text reflects system type as defined in Chapter 3745-81-01 of the Ohio Administrative Code as noted below.

Community Water System | Non-Transient, Non-Community Water System | *Transient, Non-Community Water System*

Base Maps:
Armstrongs Mills 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey
Cameron 7.5 Minute Quadrangle Topographic Map, United States Geologic Survey

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters

Map created on January 18, 2011

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PRE-SUBSIDENCE INVENTORY

Applicant's Name: AMERICAN ENERGY CORPORATION D-0425-16

SURFACE OWNER	COUNTY	TOWNSHIP / SECTION	RENEWABLE RESOURCE	STRUCTURES - USE	MAP LOC. KEY
American Energy Corporation	Belmont	Washington / 3	Woodland		**10-87**
			Recreation	Electric Lines	
			Stream(3)		U-13A, U-13B, D-13
			Undeveloped Spring (3)		
The Ohio Valley Coal Company	Belmont	Washington / 3,4	Woodland		**10-88**
			Recreation	Gas Line	
			Undeveloped Spring (6)		
			Stream (3)		U-13, D-13C, U-36
The Oklahoma Coal Company	Belmont	Washington / 3	Woodland		**10-89**
American Energy Corporation	Belmont	Washington / 9	Woodland		**10-66**
			Stream		U-12
American Energy Corporation	Belmont	Washington / 9	Woodland	T.R. 121	**10-67**
			Stream	Shed	U-11
				Electric Lines	
American Energy Corporation	Belmont	Washington / 9,15	Woodland	T.R. 121	**10-57**
			Undeveloped Spring (8)	Electric Lines	
			Streams (8)		D-10-10F, D-10-10E, D-10C, D-10I, U-25, D-10, U-10D, D-10B

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PRE-SUBSIDENCE INVENTORY

Applicant's Name: AMERICAN ENERGY CORPORATION D-0425-16

SURFACE OWNER	COUNTY	TOWNSHIP / SECTION	RENEWABLE RESOURCE	STRUCTURES - USE	MAP LOC. KEY
American Energy Corporation	Belmont	Washington / 10	Woodland		**10-63**
			Undeveloped Spring(2)		
			Stream (2)		U-26, U-12
American Energy Corporation	Belmont	Washington / 9,10	Woodland		**10-64**
			Undeveloped Spring (5)	Electric Lines	
			Stream (3)	Gas Line	U-12, U-13, U-26
American Energy Corporation	Belmont	Washington / 9	Woodland		**10-65**
			Undeveloped Spring (7)	Electric Lines	
			Stream (2)		U-11, U-30
American Energy Corporation	Belmont	Washington / 9	Residential	T.R. 121	**10-68**
			Woodland	House	
			Undeveloped Spring	Garage	
			Stream	Shed	U-11
			Well	Electric Lines	W-68.00

AEC 09513

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PRE-SUBSIDENCE INVENTORY

Applicant's Name: AMERICAN ENERGY CORPORATION D-0425-16

SURFACE OWNER	COUNTY	TOWNSHIP / SECTION	RENEWABLE RESOURCE	STRUCTURES - USE	MAP LOC. KEY
Paul E Scott Jr.	Belmont	Washington / 9	Residential	T.R. 121	**10-69**
			Woodland	House (2)	
			Stream	Shed (2)	U-11
				Electric Lines	
American Energy Corporation	Belmont	Washington / 9	Residential	T.R. 121	**10-71**
			Woodland	Cabin	
			Undeveloped Spring		
American Energy Corporation	Belmont	Washington / 9	Residential		**10-72**
			Woodland		
			Undeveloped Spring (2)		
			Stream		D-11
American Energy Corporation	Belmont	Washington / 9	Woodland		**10-73**
			Stream		D-30

AEC 09514

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

PRE-SUBSIDENCE INVENTORY

Applicant's Name: AMERICAN ENERGY CORPORATION D-0425-16

SURFACE OWNER	COUNTY	TOWNSHIP / SECTION	RENEWABLE RESOURCE	STRUCTURES - USE	MAP LOC. KEY
American Energy Corporation	Belmont	Washington / 3,9	Woodland		**10-74**
			Stream (3)		U-29, D-33, D-12
			Undeveloped Spring (3)		
Charles Caldwell & Harold Scott	Belmont	Washington / 9	Woodland		**10-76**
			Stream (2)		D-10, D-25
American Energy Corporation	Belmont	Washington / 9	Woodland		**10-77**
			Stream		D-10D
American Energy Corporation	Belmont	Washington / 3,9	Woodland		**10-86**
			Undeveloped Spring (3)	Ruins(3)	
			Stream (2)	Electric Lines	D-12, U-13B
			Well		DW-86.00
American Energy Corporation	Belmont	Washington / 10	Woodland		**10-62**
			Stream		U-12

AEC 09515

630 feet, for design purposes, to analyze for the most conservative case. The maximum cover over the room and pillar section occurs just north of the southerly section line of Section 10, and along the westerly perimeter of the permit.

(b) The projected maximum extraction ratios for mains, submains, and butt sections, as well as the existing ranges of values for the same areas.

The projected maximum extraction ratio is less than 50 percent for all room and pillar workings; see Part 4, B(5)(a)(vii). The only exception is pillars associated with gate necks as illustrated in Figure 2. These are sized as needed to no less than 40 feet between cross-cuts. The extraction rate will vary from 45 to 52.41 percent. Pillar stability is unaffected in these areas as the surrounding pillars provide a composite extraction rate well under 50 percent.

(c) Projected maximum width of entries and cross cuts throughout the mine, as well as the existing ranges of values for the same areas.

Maximum width of entries and crosscuts = 18 ft, and range typically from 16 to 18 ft.; headgate belt entry maximum 20 ft. wide.

(d) The center spacing for entries and cross cuts.

Entry centers for all submain and gate development are 75 feet. Cross-cut centers are 75 feet except at the gate neck with the submain, where the centers may be reduced to 58 feet (maximum), to accommodate haulage and supply requirements. The least lateral dimension of the resultant pillar will be no less than 40 feet, the minimum permitted under the roof control plan approved by the U.S. Dept. of Labor, Mining Safety and Health Administration (MSHA).

(e) Minimum pillar dimensions for mains, submains, and butt sections, as well as the existing ranges of values for these areas.

Minimum main, gate entry and gate neck pillars = 40 ft x 57 ft; See Addendum to Part 4, Item B(5)(a)(vii) Figure 2.

(f) The barrier pillar width between butt sections, as well as the existing ranges of values for the same areas.

There are no butt sections in this application area

(g) The engineering properties of the clay/shale, or other soft rock material in the roof and floor of the mine under both saturated and natural moisture conditions.

See Addendum to Part 4, B(4)(g)

(h) Measures to be taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface, if any.

There will be no measures taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface since extraction ratios will be low. No surface damage is anticipated. See Addendum to Part 4, B(4)(h).

(i) The minimum pillar safety factor, for protected structures, based upon coal strength and load.

a): Minimum factors of safety are contained in Addendum to Part 4, B(5)(a)(vii). The minimum expected is 1.97 where cross-cut centers may be reduced to no less than 58 feet in gate neck areas. In all other cases, the factor of safety exceeds 2.0.

b): Pillar load calculations are contained in Addendum to Part 4, B(5)(a)(vii). These are based on maximum cover conditions relative to location for given mine projections.

c): Pillar factor of safety calculations are contained in Addendum to Part 4, B(5)(a)(vii).

(j) Methods and calculations used to determine the long-term safety factor.

A modified Holland Formula; See Addendum to Part 4, Item B(5)(a)(vii) as well as Figures 1 & 2.

(k) Provide the minimum long-term subsidence control safety factor recommended by the method's author or the literature supporting this method.

The Factor of Safety has been determined and fine tuned by years of actual experience in the local geology and coal seam, previously by North American Coal Co. and subsequently Ohio Valley Coal Co. in the Powhatan No. 6 Mine and American Energy Corp. in the Century Mine. Subsidence is a function of the extraction rates. See Addendum to Part 4, Item B(5)(a)(vii) as well as Figures 1 & 2 for calculations.

(l) Indicate how coal strength was determined if the assumed coal compressive strength exceeds 900 psi.

Not applicable. The strength of the Pittsburgh (No. 8) coal in this area was determined by Professor Charles Holland years ago with the use of 3 in. cube specimens. The design strength was found to be 4330 psi. Professor Holland and others have found that, due to the cleavage planes and other natural seam defects, the In-situ compressive strength for a 6 ½ ft. seam is 850 psi.

ADDENDUM TO PART 4, ITEM B(4)(g & h)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

ANTICIPATED EFFECTS OF ROOF and FLOOR MATERIAL UNDER WET CONDITIONS

The floor primarily consists of shale or calcareous shale, with an occasional thin bed of claystone. In compressive strength tests for nearby Ohio Valley Coal applications D-0360-12 and -13, the compressive strength of the shale was found to be 5,034 to 9,453 psi and for the calcareous shale, 9,444 to 12,590 psi. These shale units frequently contain limestone nodules. The roof physical properties (compressive strength): (1) 6 to 24 inches of roof coal, 900 psi; 4 feet of claystone, 1000 to 2500 psi; (3) 15 feet of limestone, > 10,000 psi. Since the strength of the coal is much less than the strength of the floor rock, the stability factor for the coal will determine the stability of the mine.

The pillars in this application have been designed for long-term stability according to State law with extraction rates of less than 50%. The floor rock is stable under saturated conditions. Mine roof stability at the Century mine is achieved through implementation of the approved MSHA roof control plan. To understand the interaction of the roof with the pillars and the floor, one must understand that the main roof in the mine is a massive limestone. This limestone bridges over the entire workings of the mine, and is extremely competent. Under the limestone is the immediate roof, comprised of layers of claystone, shale, limey shale, or coal partings primarily. To support the immediate roof, roof bolts are used to function in one of two ways: suspension and compression. The roof bolts may be used to suspend the immediate roof from the overlying competent main roof or some other competent member above the immediate roof. Rather than suspending the roof from the main roof, bolts of the size used at this mine are used to compress the immediate roof and form a beam that is much more competent than the individual layers that comprise this roof member. The roof bolts use a combination system of a point anchor and resin. Historically, we know that the abandoned Powhatan No. 2 and 5 mines have not collapsed as these are used for underground injection of treated AMD. There are no subsidence issues there or with the abandoned Powhatan No. 1 and 3 mines.

Despite the roof bolting that is done, over time, three to six ft of the immediate roof may fall into the void below, and leaving the immediate roof that is over the pillars in place. It is the pillars that support the main roof and prevent subsidence. The pillars are designed with such a high safety factor that even if the pillars spall and are reduced in size, they still maintain their core strength and adequately support the roof. In fact, once the immediate roof falls into the void and swell, they provide confinement and prevent spalling of the pillars. Water tends to also confine the pillars, as evidenced by events only a few years ago under Interstate 70 just east of Cambridge, Ohio. When surface mining intersected the old mine voids, the mine was dewatered and some subsidence occurred under the road. Should this mine become inundated, it is unlikely that dewatering will occur because the mine is entirely below drainage.

Historical evidence throughout the State indicates that "pothole" subsidence may occur in less than 200 ft of cover. Even without knowing the particulars of every such event, one can assume that such mining occurred many years ago. At that time, roof control was designed to

allow the roof to stand long enough to allow safe extraction of the coal typically with retreat mining and "robbing" the pillars. This practice is not applicable to the development entries using room and pillar in this application. Also, pillars were often undersized compared to today's standards. In addition, in low cover areas, many mines were developed as "house coal mines" and did not have any standards to assure safety. These mines can hardly be compared with this mine that has pillars designed on the highest cover in the area. Pillars will not be robbed at this mine, and subsidence will thus be prevented over the long term.

Subsidence in the Application area under 200 feet of cover is to be controlled by the mining extraction rate. Zero subsidence is projected in areas where the extraction rate will be less than 50 percent. This applies to all cover conditions.

(m) Describe any prior unplanned subsidence events, pillar or floor failure experienced by the applicant. Indicate the seam mined and relevant facts.

There have been no unplanned subsidence events, pillar or floor failure experienced by the American Energy Corporation's Century Mine.

(5) For those areas mapped as full coal recovery mining, provide the following information:

(a) For each method to be employed (i.e. longwall or pillar extraction), provide the following:

i) Rate and direction of dip for the coal seam.

0.5% S 30 deg. E

ii) Dimensions of panels or butt sections.

Width = 1150'; Lengths = 2489', 4142', 2890', 8683', 8289', 7431'

iii) Thickness of coal to be extracted (mining height).

The projected average mining height is 6.5 feet in room and pillar workings and approximately 5.7 feet in the longwall panels. This is subject to change relative to variation in coalbed geology. In general, all coal mines operate to produce the cleanest raw coal product. That means mining in-seam to the extent possible. Other factors affecting mining heights include machinery clearance requirements, ventilation, and haulage. Drilling reports are never the sole criteria for determining mining height.

iv) Maximum angle of draw.

Maximum 24 degrees. This angle of draw limit is indicated on the Application Map as the Zero Subsidence line and is contained within the permit boundary.

v) Maximum anticipated subsidence.

4.16 ft. (64% of 6.5 ft.)

vi) Width of barrier pillars or chain pillars between sections or panels.

230 ft. barrier (between mains/panels); 47 ft. (chain pillars between panels).

vii) The maximum extraction ratio within a pillaring section.

Maximum extraction ratios for room and pillar development are calculated in this section. The ODNR use of the term "pillaring"

here normally applies to secondary or retreat mining in room and pillar production workings where mine pillars are partially recovered. This method is not practiced at the Century mine. For calculated extraction ratios in the proposed development areas, see Addendum to Part 4, Item B(5)(a)(vii) and Figures. These are 52.4% for Minimum typical pillars and 43.25% for Headgate pillars with 20' entry.

(b) The anticipated effects of planned subsidence upon the land and water resources identified in the subsidence control survey and survey of ground and surface water resources.

See Addendum to Part 4, Item B(5)(b)

(c) The measures to be taken to mitigate the anticipated effects of planned subsidence to the land and water resources.

See Addendum to Part 4, Item B(5)(c)

(d) The anticipated effects of planned subsidence upon the structures identified in the subsidence control survey.

See Addendum to Part 4, Item B(5)(d)

(e) The proposed measures to be taken to mitigate anticipated effects to structures.

See Addendum to Part 4, Item B(5)(e)

(f) The proposed measures to determine the extent of mining related damages including a pre-subsidence survey with an indication of the timing of the survey.

See Addendum to Part 4, Item B(5)(f)

(g) The provisions for repair and/or compensation for damages to structures.

See Addendum to Part 4, Item B(5)(g)

(h) Describe the monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage in accordance with rule 1501:13-12-03 of the Administrative Code.

See Addendum to Part 4, Item B(5)(h)

ADDENDUM TO Part 4, B(5)(a)(vii)

WILLIAM J. SIPLIVY, P.E., INC.

Mining Engineer and Geologist

28 September 2010

Mr. Drew Hudson
Environmental Engineer
American Energy Corporation
43521 Mayhugh Hill Road
Beallsville, Ohio 43716

RE: Pillar Stability Analysis, ODNR Application D-0425-16

Dear Mr. Hudson:

At your request, a coal pillar stability analysis was made for development mining proposed in Application D-0425-16 for the American Energy Corporation's Century mine. The mine plan considered consists of three gate and six main entries developed under the following conditions:

1. Entries are to be driven 18 feet wide, maximum, on 75 foot centers, minimum.
2. Cross-cuts are to be driven 18 feet wide, maximum, on 75 foot centers, minimum, and turned at either 60 or 90 degree angles.
3. Mining height is 6.5 feet
4. Maximum overburden thickness is 630 feet for both the gate and main entries.

Stability Analysis

The stability analysis was made using the NIOSH, ARMPS 5.0.43 program. A compressive strength of 900 psi was used for the Pittsburgh No. 8 coalbed, per the recommendation of MSHA, District 3, Morgantown, West Virginia.

The calculated ARMPS stability factors are summarized as follows:

Gate Entries

The pillar stability factors are 2.52 and 2.78 when the cross-cuts are turned at 60 and 90 degrees, respectively. The extraction rates are 45 and 42 percent when the cross-cuts are turned at 60 and 90 degrees, respectively.

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Main Entries

The pillar stability factors are 2.52 and 2.78 when the cross-cuts are turned at 60 and 90 degrees, respectively. The extraction rates are 45 and 42 percent when the cross-cuts are turned at 60 and 90 degrees, respectively.

Conclusions

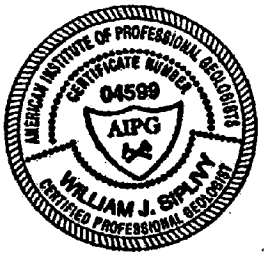
Stable pillars are expected for all mining projections analyzed due to the stability factor being greater than 2 and a mining extraction of less than 50 percent.

Please let me know if there are any questions.

Respectfully submitted,

William J. Siplivy, P.E., Inc.

William J. Siplivy, P.E., C.P.G.
President



ARMPS, 9/30/2010, 16:11:50

ARMPS module build: 5.0.43
Project File: UnTitled
Input Units: (ft) (psi)

[PROJECT TITLE]
D-0425-16

[PROJECT DESCRIPTION]
3 Entry Gate System - 60 degrees

[DEVELOPMENT GEOMETRY PARAMETERS]
Entry Height.....6.5 (ft)
Depth of Cover.....630 (ft)
Crosscut Angle.....60 (deg)
Entry Width.....18 (ft)
Number of Entries.....3
Crosscut Spacing.....75 (ft)
Center to Center Distance #1.....75 (ft)
Center to Center Distance #2.....75 (ft)

[DEFAULT PARAMETERS]
In Situ Coal Strength.....900 (psi)
Unit Weight of Overburden.....162 (pcf)
Breadth of AMZ.....125 (ft)
AMZ set automatically

[RETREAT MINING PARAMETERS]
Loading Condition.....DEVELOPMENT

[ARMPS STABILITY FACTORS]

DEVELOPMENT.....2.52

[DATA ABOUT THE ACTIVE MINING ZONE (AMZ)]

AMZ Width.....150.0 (ft)
AMZ Breadth.....125.0 (ft)
AMZ Area.....18750.0 (ft)*(ft)
Extraction Ratio Within AMZ.....0.45
Development Load on AMZ.....9.57E+05 (tons)

TOTAL LOADINGS ON AMZ, INCLUDING TRANSFER FROM BARRIERS

LOAD CONDITION	ABUTMENT LOAD (tons)	LTRANSBAR (tons)	LTRANSREM (tons)	TOTAL (tons)
DEVELOPMENT	0.00E+00	0.00E+00	0.00E+00	9.57E+05

R-Factor for front abutment is the percent of the total front abutment load that is applied to the AMZ.

R-Factor for side abutment is the percent of the total side abutment load that is applied to the barrier pillar (the remainder is applied to the AMZ).

LTRANBAR is the load transferred to the AMZ from the barrier pillar between the side and active gob if the barrier's SF is less than 1.5.

LTRANSREM is the load transferred to the AMZ from the remnant barrier between the side and active gob if the remnant's SF is less than 1.5.

[PILLAR PARAMETERS]

ARMPS, 9/30/2010, 16:11:50

PILLAR	ENTRY CENTER (ft)	MINIMUM DIMENSION (ft)	MAXIMUM DIMENSION (ft)
1	75.00	46.95	65.82
2	75.00	46.95	65.82

PILLAR	AREA (ft)*(ft)	STRENGTH (psi)	LOAD-BEARING CAPACITY (tons)
1	3.09E+03	3.25E+03	7.24E+05
2	3.09E+03	3.25E+03	7.24E+05

TOTAL LOAD-BEARING CAPACITY OF PILLARS WITHIN AMZ: 2.41E+06 (tons)

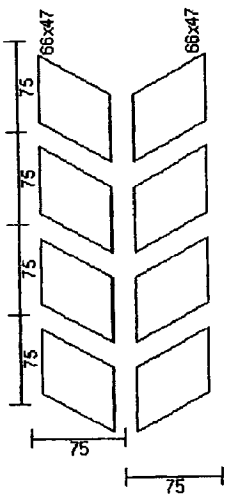
To view the distribution of Pillar Load Bearing Capacity
select 'View Plots->Settings->Pillar Load Bearing Capacity'

[BARRIER PILLAR PARAMETERS]
none

[STRESS ON INDIVIDUAL PILLARS WITHIN THE AMZ]

DEVELOPMENT STRESSES.....1290 (psi)

ARMPS: Actual Pillar Dimensions (width*length, ft). Entries shown from left to right.



ARMPS, 9/30/2010, 16:12:21

ARMPS module build: 5.0.43
Project File: UnTitled
Input Units: (ft) (psi)

[PROJECT TITLE]
D-0425-16

[PROJECT DESCRIPTION]
3 Entry Gate System - 90 degrees

[DEVELOPMENT GEOMETRY PARAMETERS]
Entry Height.....6.5 (ft)
Depth of Cover.....630 (ft)
Crosscut Angle.....90 (deg)
Entry Width.....18 (ft)
Number of Entries.....3
Crosscut Spacing.....75 (ft)
Center to Center Distance #1.....75 (ft)
Center to Center Distance #2.....75 (ft)

[DEFAULT PARAMETERS]
In Situ Coal Strength.....900 (psi)
Unit Weight of Overburden.....162 (pcf)
Breadth of AMZ.....125 (ft)
AMZ set automatically

[RETREAT MINING PARAMETERS]
Loading Condition.....DEVELOPMENT

[ARMPS STABILITY FACTORS]

DEVELOPMENT.....2.78

[DATA ABOUT THE ACTIVE MINING ZONE (AMZ)]

AMZ Width.....150.0 (ft)
AMZ Breadth.....125.0 (ft)
AMZ Area.....18750.0 (ft)*(ft)
Extraction Ratio Within AMZ.....0.42
Development Load on AMZ.....9.57E+05 (tons)

TOTAL LOADINGS ON AMZ, INCLUDING TRANSFER FROM BARRIERS

LOAD CONDITION	ABUTMENT LOAD (tons)	LTRANSBAR (tons)	LTRANSREM (tons)	TOTAL (tons)
DEVELOPMENT	0.00E+00	0.00E+00	0.00E+00	9.57E+05

R-Factor for front abutment is the percent of the total front abutment load that is applied to the AMZ.

R-Factor for side abutment is the percent of the total side abutment load that is applied to the barrier pillar (the remainder is applied to the AMZ).

LTRANBAR is the load transferred to the AMZ from the barrier pillar between the side and active gob if the barrier's SF is less than 1.5.

LTRANSREM is the load transferred to the AMZ from the remnant barrier between the side and active gob if the remnant's SF is less than 1.5.

[PILLAR PARAMETERS]

PILLAR	ENTRY CENTER (ft)	MINIMUM DIMENSION (ft)	MAXIMUM DIMENSION (ft)
1	75.00	57.00	57.00
2	75.00	57.00	57.00

PILLAR	AREA (ft)*(ft)	STRENGTH (psi)	LOAD-BEARING CAPACITY (tons)
1	3.25E+03	3.42E+03	7.99E+05
2	3.25E+03	3.42E+03	7.99E+05

TOTAL LOAD-BEARING CAPACITY OF PILLARS WITHIN AMZ: 2.66E+06 (tons)

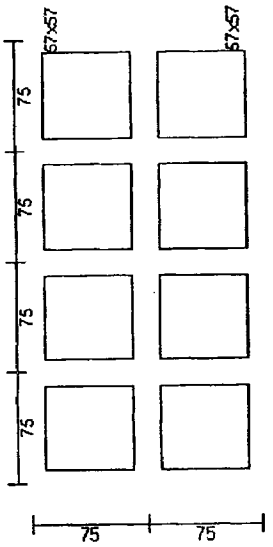
To view the distribution of Pillar Load Bearing Capacity
select 'View Plots->Settings->Pillar Load Bearing Capacity'

[BARRIER PILLAR PARAMETERS]
none

[STRESS ON INDIVIDUAL PILLARS WITHIN THE AMZ]

DEVELOPMENT STRESSES.....1227 (psi)

ARMPS: Actual Pillar Dimensions (width*length, ft). Entries shown from left to right.



ARMPS, 9/30/2010, 16:13:35

ARMPS module build: 5.0.43
Project File: UnTitled
Input Units: (ft) (psi)

[PROJECT TITLE]
D-0425-16

[PROJECT DESCRIPTION]
6 Entry Mains - 60 degrees

[DEVELOPMENT GEOMETRY PARAMETERS]
Entry Height.....6.5 (ft)
Depth of Cover.....630 (ft)
Crosscut Angle.....60 (deg)
Entry Width.....18 (ft)
Number of Entries.....6
Crosscut Spacing.....75 (ft)
Center to Center Distance #1.....75 (ft)
Center to Center Distance #2.....75 (ft)
Center to Center Distance #3.....75 (ft)
Center to Center Distance #4.....75 (ft)
Center to Center Distance #5.....75 (ft)

[DEFAULT PARAMETERS]
In Situ Coal Strength.....900 (psi)
Unit Weight of Overburden.....162 (pcf)
Breadth of AMZ.....125 (ft)
AMZ set automatically

[RETREAT MINING PARAMETERS]
Loading Condition.....DEVELOPMENT

[ARMPS STABILITY FACTORS]

DEVELOPMENT.....2.52

[DATA ABOUT THE ACTIVE MINING ZONE (AMZ)]

AMZ Width.....375.0 (ft)
AMZ Breadth.....125.0 (ft)
AMZ Area.....46875.0 (ft)*(ft)
Extraction Ratio Within AMZ.....0.45
Development Load on AMZ.....2.39E+06 (tons)

TOTAL LOADINGS ON AMZ, INCLUDING TRANSFER FROM BARRIERS

LOAD CONDITION	ABUTMENT LOAD (tons)	LTRANSBAR (tons)	LTRANSREM (tons)	TOTAL (tons)
DEVELOPMENT	0.00E+00	0.00E+00	0.00E+00	2.39E+06

R-Factor for front abutment is the percent of the total front abutment load that is applied to the AMZ.

R-Factor for side abutment is the percent of the total side abutment load that is applied to the barrier pillar (the remainder is applied to the AMZ).

LTRANBAR is the load transferred to the AMZ from the barrier pillar between the side and active gob if the barrier's SF is less than 1.5.

LTRANSREM is the load transferred to the AMZ from the remnant barrier between the side and active gob if the remnant's SF is less than 1.5.

ARMPS, 9/30/2010, 16:13:35

[PILLAR PARAMETERS]

PILLAR	ENTRY CENTER (ft)	MINIMUM DIMENSION (ft)	MAXIMUM DIMENSION (ft)
1	75.00	46.95	65.82
2	75.00	46.95	65.82
3	75.00	46.95	65.82
4	75.00	46.95	65.82
5	75.00	46.95	65.82

PILLAR	AREA (ft)*(ft)	STRENGTH (psi)	LOAD-BEARING CAPACITY (tons)
1	3.09E+03	3.25E+03	7.24E+05
2	3.09E+03	3.25E+03	7.24E+05
3	3.09E+03	3.25E+03	7.24E+05
4	3.09E+03	3.25E+03	7.24E+05
5	3.09E+03	3.25E+03	7.24E+05

TOTAL LOAD-BEARING CAPACITY OF PILLARS WITHIN AMZ: 6.03E+06 (tons)

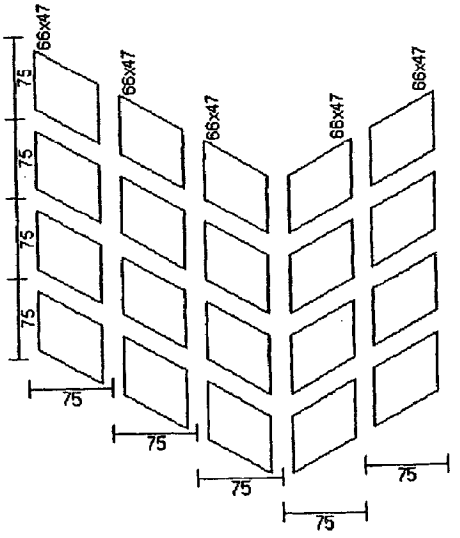
To view the distribution of Pillar Load Bearing Capacity
select 'View Plots->Settings->Pillar Load Bearing Capacity'

[BARRIER PILLAR PARAMETERS]
none

[STRESS ON INDIVIDUAL PILLARS WITHIN THE AMZ]

DEVELOPMENT STRESSES.....1290 (psi)

ARMPS: Actual Pillar Dimensions (width*length, ft). Entries shown from left to right.



ARMPS, 9/30/2010, 16:13:01

ARMPS module build: 5.0.43
Project File: UnTitled
Input Units: (ft) (psi)

[PROJECT TITLE]
D-0425-16

[PROJECT DESCRIPTION]
6 Entry Mains - 90 degrees

[DEVELOPMENT GEOMETRY PARAMETERS]
Entry Height.....6.5 (ft)
Depth of Cover.....630 (ft)
Crosscut Angle.....90 (deg)
Entry Width.....18 (ft)
Number of Entries.....6
Crosscut Spacing.....75 (ft)
Center to Center Distance #1.....75 (ft)
Center to Center Distance #2.....75 (ft)
Center to Center Distance #3.....75 (ft)
Center to Center Distance #4.....75 (ft)
Center to Center Distance #5.....75 (ft)

[DEFAULT PARAMETERS]
In Situ Coal Strength.....900 (psi)
Unit Weight of Overburden.....162 (pcf)
Breadth of AMZ.....125 (ft)
AMZ set automatically

[RETREAT MINING PARAMETERS]
Loading Condition.....DEVELOPMENT

[ARMPS STABILITY FACTORS]

DEVELOPMENT.....2.78

[DATA ABOUT THE ACTIVE MINING ZONE (AMZ)]

AMZ Width.....375.0 (ft)
AMZ Breadth.....125.0 (ft)
AMZ Area.....46875.0 (ft)*(ft)
Extraction Ratio Within AMZ.....0.42
Development Load on AMZ.....2.39E+06 (tons)

TOTAL LOADINGS ON AMZ, INCLUDING TRANSFER FROM BARRIERS

LOAD CONDITION	ABUTMENT LOAD (tons)	LTRANSBAR (tons)	LTRANSREM (tons)	TOTAL (tons)
DEVELOPMENT	0.00E+00	0.00E+00	0.00E+00	2.39E+06

R-Factor for front abutment is the percent of the total front abutment load that is applied to the AMZ.

R-Factor for side abutment is the percent of the total side abutment load that is applied to the barrier pillar (the remainder is applied to the AMZ).

LTRANBAR is the load transferred to the AMZ from the barrier pillar between the side and active gob if the barrier's SF is less than 1.5.

LTRANSREM is the load transferred to the AMZ from the remnant barrier between the side and active gob if the remnant's SF is less than 1.5.

ARMPS, 9/30/2010, 16:13:01

[PILLAR PARAMETERS]

PILLAR	ENTRY CENTER (ft)	MINIMUM DIMENSION (ft)	MAXIMUM DIMENSION (ft)
1	75.00	57.00	57.00
2	75.00	57.00	57.00
3	75.00	57.00	57.00
4	75.00	57.00	57.00
5	75.00	57.00	57.00

PILLAR	AREA (ft)*(ft)	STRENGTH (psi)	LOAD-BEARING CAPACITY (tons)
1	3.25E+03	3.42E+03	7.99E+05
2	3.25E+03	3.42E+03	7.99E+05
3	3.25E+03	3.42E+03	7.99E+05
4	3.25E+03	3.42E+03	7.99E+05
5	3.25E+03	3.42E+03	7.99E+05

TOTAL LOAD-BEARING CAPACITY OF PILLARS WITHIN AMZ: 6.66E+06 (tons)

To view the distribution of Pillar Load Bearing Capacity
select 'View Plots->Settings->Pillar Load Bearing Capacity'

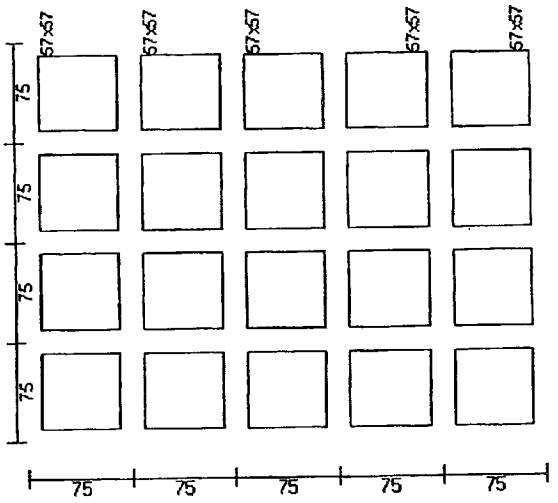
[BARRIER PILLAR PARAMETERS]
none

[STRESS ON INDIVIDUAL PILLARS WITHIN THE AMZ]

DEVELOPMENT STRESSES.....1227 (psi)

ARMPS: Actual Pillar Dimensions (width*length, ft). Entries shown from left to right.

Addendum to Part 4, B(5)(a)(vii)

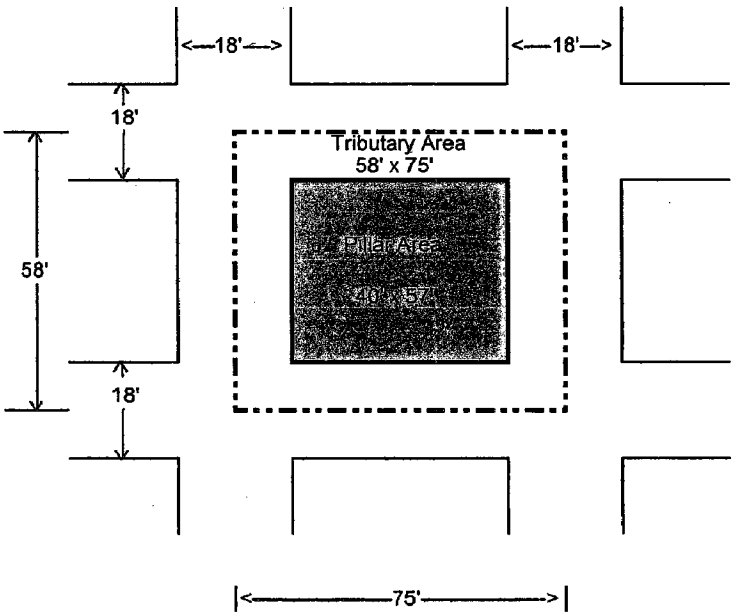


WILLIAM J. SIPLIVY, P.E., INC.

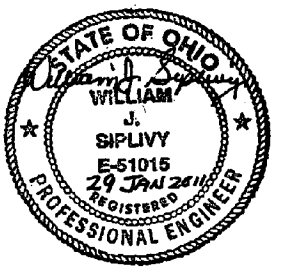
Geotechnical Engineer

American Energy Corporation
Application D-0425-16
Addendum to Part 4, B(5)(a)(vii)
29 January 2011

Figure 2. Minimum Pillar Dimension with 18' Enrties



Extraction ratio = 1 - [(40 x 57)/(58 x75)] = 0.5241
Percent coal unmined = 100 - 52.41 = 47.591%
Maximum overburden thickness = 570 feet (North end of submain, Section 10, Wash. Twp.)
Average weight density of rock = 0.0707 tons/ft^3
Average load on pillar = (570 ft. x 0.0707 tons/ft^3) / 0.5241 = 76.89 tons/ft^2
Pillar strength$^{(1)}$ = 7500 (480")$^{1/2}$ / 78" = 2106.62 psi = 151.68 tons/ft^2
Factor of Safety = 151.68 / 76.89 = 1.97



(1) Holland-Gaddy Coal Pillar Strength Formula, where:

Strength of Pillar = K (L)$^{1/2}$ / T
K = Material coefficient: = Sp (D)$^{1/2}$ = 4330(3)$^{1/2}$ = 7500.
L = Least lateral pillar dimension, in inches (use 480 in.).
T = Pillar thickness, in inches (use 78")
Sp = Test strength, psi in unconfined compression.
(Use 4330 psi, determined by Holland for the Pittsburgh coalbed).
D = Edge dimension of tested specimen, in inches (use 3").

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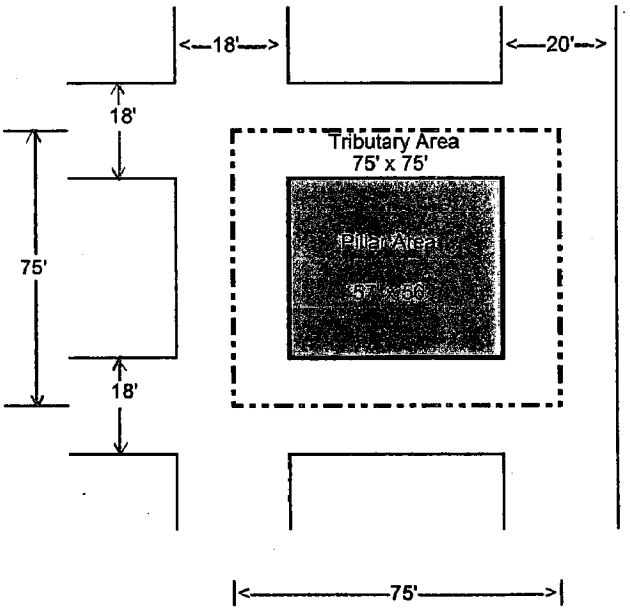
WILLIAM J. SIPLIVY, P.E., INC.

Geotechnical Engineer

American Energy Corporation
Application D-0425-16
Addendum to Part 4, B(5)(a)(vii)
29 January 2011

Figure 1. Headgate Pillar, 75' o.c. with 20' Headgate Entry



Extraction ratio = 1 - [(57 x 56)/(75 x75)] = 0.4325
Percent coal unmined = 100 - 43.25 = 56.75%
Maximum overburden thickness = 600 feet (South gates of north panel, Section 10, Wash. Tw
Average weight density of rock = 0.0707 tons/ft^3
Average load on pillar = (600 ft. x 0.0707 tons/ft^3) / 0.5675 = 74.75 tons/ft^2
Pillar strength$^{(1)}$ = 7500 (672")$^{1/2}$ / 78" = 2492.59 psi = 179.47 tons/ft^2
Factor of Safety = 179.47 / 74.75 = 2.40

(1) Holland-Gaddy Coal Pillar Strength Formula, where:

Strength of Pillar = K $(L)^{1/2}$ / T

K = Material coefficient: = Sp $(D)^{1/2}$ = 4330(3)$^{1/2}$ = 7500.
L = Least lateral pillar dimension, in inches (56' x 12"/ft. = 672").
T = Pillar thickness, in inches (use 78").
Sp = Test strength in unconfined compression, in psi.
(Use 4330 psi, determined by Holland for the Pittsburgh coalbed).
D = Edge dimension of tested specimen, in inches (use 3").

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ADDENDUM TO PART 4, ITEM B(5)(b)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE – SURFACE LANDS AND WATER RESOURCES

Tension cracking of the ground surface may occur. These cracks in the surface may vary in width from hairline, up to several inches wide.

Slip-Prone Soils

A search of the Belmont County Soils Maps revealed several potential slide/slip areas within the following soil types: LeF, LpF, LoF, LoE, and RcE.

These areas have been mapped on the enclosed map showing the limits of the application area and slip prone soils. Of the types of slip-prone soils identified, only LpF (Lowell-Westmoreland silt loam) has been known to be slip pone during longwall mining-induced subsidence in some areas. Other soil types have been undermined before without slippage occurring.

During the pre-subsidence survey, areas known to be slip prone during subsidence, as well as other similar sites that may have a significant impact to existing structures, may be inspected. Should conditions dictate, site-specific measures, not limited to but including installation of cut-off trenches, drainage systems, and retaining walls, may be taken to minimize adverse effects.

Other Observations

In the event that horizontal movement occurs, it is expected to be in steeply sloping ground where slips have been shown to historically occur. These previously occurring slips were mainly in slip-prone soils, and this is to be expected with any future slipping. Near the center of the panel, the ground moved upwards in several small areas after subsidence as the compressive strain caused the soils to heave upward. Surface cracking up to about 6 inches wide have been shown to occur during the time the areas were put under tension. This surface cracking should be limited to only a few small isolated areas where they generally close due to compressive forces and to rainfall. Most cracks if they occur are expected to be less than 1 inch wide. In the event cracks in the soil are found that are wide enough to be considered hazardous, they will be repaired immediately by American Energy Corporation. If damage to the land surface occurs that reduces the foreseeable use or value of the land, those damages will be repaired as well.

ADDENDUM TO PART 4, ITEM B(5)(b)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

Water Resources

The effect of subsidence on water resources varies greatly. The effect on wells, springs, streams, and other surface water each differ in the type and duration of effects. Each will be discussed below.

Wells

Depending upon the depth of the well, its location within the longwall subsidence area, and its surface elevation compared to the elevation of the coal, the effect of subsidence on wells may vary from complete de-watering to some de-watering to no de-watering. Generally as the subsidence opens new places for the ground water to go, the elevation of the water decreases. The ground water is still present, but at a lower elevation. Aquicludes prevent further downward migration of water into the mine. In addition, the soft rock, particularly the clay stones in the strata, tend to swell, erode, and fill voids, causing some recovery in the elevation of the water. Wells may become completely dry temporarily, may hold less water, or as has been experienced in some instances, may not be affected. In some cases, the water level actually increases temporarily. This effect is caused by the strata being placed in compression and closing some of the joints, cracks, or bedding planes (secondary porosity features) that hold the water. However, as a general rule, the water level in wells decreases. As new surfaces are opened that water begins to flow over, the quality of the water also varies, usually temporarily. Normally, some increase in suspended solids, iron, manganese, and sulfates has been observed. These effects usually return to near normal after the water "washes" out the new chemicals.

Springs

Springs, given the fact that they are located on the surface, generally decrease in flow and usually dry completely with little or no recovery. The water stops flowing because it is no longer at the elevation of the surface installation. The water begins to flow horizontally through different bedding planes and can be developed successfully into a spring at a lower elevation, as witnessed in past experience. Water quality varies as with wells. However, because of the increased porosity of the strata, springs developed over longwall panels, generally have higher flow.

Effect on Streams Containing Fish

Several streams containing fish (minnows primarily) have been undermined by the longwall at the Century Mine. In some cases, the streams are un-affected by subsidence. In other cases, the stream goes dry temporarily, usually until the next major storm. In all cases, normal stream flow returned. No fish have been killed as a result of the stream going dry temporarily. Streams normally go dry or nearly dry for a portion of the year and fish that live there migrate downstream, only to return during the wet season.

ADDENDUM TO PART 4, ITEM B(5)(b)
AMERICAN ENERGY CORPORATION
CENTURY MINE
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Streams

Impacts to streams vary according to many factors, including depth of cover, the order (drainage area size) of the stream, topography, rainfall for a period following undermining, etc. Generally, streams are temporarily affected by subsidence, decreasing in flow as cracks open in the stream bed. However, because the streams contain a high concentration of sediment during rains, the cracks fill quickly and the effect is short lived. The water re-establishes itself within several years.

It is believed that streams are impacted through two mechanisms: Fracturing of bedrock and disruption of stream gradient. When the longwall mines through an area, subsidence occurs. The land subsides immediately after the longwall advances past a point. Monitoring performed by The Ohio Valley Coal Company shows that subsidence is complete within five to ten days after mining is complete. As the ground subsides, it experiences tensile and compressive forces such that existing cracks may be opened or closed, and new cracks form due to the tensile forces. In general, the additional cracking that occurs from the subsidence "wave" may cause a stream to go dry temporarily.

Subsidence occurs more in the middle of a longwall panel, compared to the sides or ends. This "differential subsidence" disrupts the gradient of the stream to where water can be observed flowing and then it disappears when the downstream bed is higher than the upstream segment. It is not uncommon to have water pool upstream of gate entries. In a few locations, the middle of the panel moves upward as the ground around it is put into compression, causing a localized "high spot". During high-flow periods, the gradient is re-established naturally.

Generally, streams are temporarily affected by subsidence, decreasing in flow as cracks open in the stream bed. However, because the streams contain a high concentration of sediment during rains, the cracks fill quickly and the effect is short lived. The water re-establishes itself within several years. Streams in this area begin from undeveloped and developed springs near the head of hollows and are fed throughout their length by springs and surface runoff. Streams that are fed by springs near the head of hollows continue to receive this groundwater, but at a lower elevation. Since rainfall is unaffected by subsidence, runoff continues to supply the water for streams.

Planned subsidence is projected in several ravines that discharge into Captina and Pea Vine Creeks. These areas are to be monitored as mining occurs beneath them. Any resultant conditions considered hazardous to the general public will be repaired immediately by AEC. In the past, other steep ravines have been subject to subsidence from longwall mining. Slips and subsequent stream blockage were never experienced.

Other Surface Water Features

There are no ponds, cisterns or catch basins within the full recovery mining area.

ADDENDUM TO PART 4, ITEM B(5)(c)
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MEASURES TO MITIGATE ANTICIPATED EFFECTS TO LAND AND WATER

Damage Repairs - Wetlands

In the event of a wetland being damaged by subsidence, AEC will take the proper steps to mitigate the damage. If surface cracking occurs in a wetland, the cracks will be excavated below the extents of the hydric soils, grouted or sealed with a material suitable for preventing any water loss into the cracking, and re-graded or blended to conform to the rest of the wetland. If a wetland is affected by loss of either all or a portion of an existing ground water source, a portion of the wetland's hydric soils will be graded in a manner to create pooling from surface water runoff. AEC will take proper steps to minimize and avoid as much of the undamaged wetlands as possible during remediation, and native wetland vegetation will be planted in the disturbed areas graded with hydric soils. To date, AEC is currently unaware of any damage of wetlands from subsidence related to this mine or any other the adjacent mines in the #8 coal seam, and none is anticipated.

Damage Repairs – Streams Containing Fish

Streams containing fish are generally higher order streams (perennial) in nature, and as such no subsidence is planned under perennial streams with less than 200 ft of cover to prevent stream loss. There are no perennial streams in the application area outside the range. AEC will monitor all streams as outlined in the Addendum to Part 3, Item D. In the event that a stream's flow is reduced or diminished due to longwall subsidence, AEC will notify the Division of Mineral Resource Management. AEC will also monitor the stream bed monthly up to a five year period to check for natural restoration, with all findings being reported to DMRM on a quarterly basis. If normal flow is not re-established in this five year time frame, AEC will, mitigate the subsidence damage and restore normal flow to the stream. The mitigation efforts will take place immediately after the five year monitoring period has shown no recovery from the flow loss. The type of flow interruption will first be identified to determine if it is loss due to change in grade of the stream bed or fracturing of the rock strata below the stream. For grade change the stream channel will be re-graded to allow the flow an uninterrupted path and connecting the pools that typically form with grade change from subsidence. In the event the flow is lost due to surface cracks in the channel diverting the water into the ground, the cracks will be grouted with a material suitable for filling the void allowing water to continue with normal flow. Monitoring will continue during mitigation operations to ensure that proper flow has been restored. To date, no repairs have been required for streams containing fish. None are anticipated.

Damage Repairs - Streams

It is believed that streams are impacted through two mechanisms: Fracturing of bedrock and disruption of stream gradient. When the longwall mines through an area, subsidence occurs. The land subsides immediately after the longwall advances past a point. AEC's monitoring shows that subsidence is complete within five to ten days. As the ground subsides, it experiences tensile and compressive forces such that existing cracks may be opened or closed, and new

cracks form due to the tensile forces. In general, the additional cracking that occurs from the subsidence "wave" may cause a stream to go dry temporarily. After several months, and following several significant rainfall events, naturally occurring sediment fills the cracks and the streams tend to heal themselves following subsidence. Flow is re-established after several months when sufficient rainfall has occurred to fill any cracks and to replenish the water table to allow water to rise into the stream bed.

Subsidence occurs more in the middle of a longwall panel, compared to the sides or ends. This "differential subsidence" disrupts the gradient of the stream to where water can be observed flowing and then it disappears when the downstream bed is higher than the upstream segment. It is not uncommon to have water pool upstream of gate entries, requiring some minor re-grading of the stream to re-establish the gradient for the entire length of the stream. In a few locations, the middle of the panel moves upward as the ground around it is put into compression, causing a localized "high spot." During high-flow periods, the gradient is re-established naturally. Occasionally, some fieldwork is necessary so the process occurs faster.

Recently, The Ohio Valley Coal Company (OVCC) has conducted a study of streams (all types – perennial, intermittent, ephemeral) undermined by the OVCC Powhatan #6 longwall operations. In the last several years, The Powhatan No. 6 Mine has undermined several streams. We concentrated our efforts on main streams that were undermined within the last six years. We discovered that approximately 89 percent of the nearly 50,000 ft of streams were flowing. The remaining 11 percent are located in remote areas requiring some gradient work to re-establish flow for the entire length of the stream. This evaluation was performed in September 2006 when flow conditions were low. There had been no rain for several days, so we believe that the conditions were appropriate for this evaluation. Table 1 shows the results of the field evaluation.

Table 1 Stream Recovery 1999 – 2005

Mined From	Mined To	Total Length (ft)	Non-Flowing Length (ft)	Flowing Length (ft)	Percent Flowing
Sep-05	Sep-06	1121		1121	100%
Sep-04	Sep-05	6555		6555	100%
Sep-03	Sep-04	19172	-3094	16078	84%
Sep-02	Sep-03	10112	-388	9724	96%
Sep-01	Sep-02	4968	-1337	3631	73%
Sep-00	Sep-01	5430	-554	4876	90%
Sep-99	Sep-00	2501		2501	100%
Since Sep-99	Totals	49859	-5373	44486	89%

Stream flow appears to be independent of time, and appears to be more dependent on establishing the proper flow gradient. Streams undermined only one or two years before the study date (September 2006) were flowing for their entire length, as were streams undermined

seven years before the study date. However, there were streams undermined only four years before the study date, where only 73 percent of the stream length was flowing.

Since the original study in September, 2006, the streams were visited again in February, 2011. At that time, 100 percent of the stream lengths were flowing. The streams recovered naturally and without any mitigation.

As is typical for Southeast Ohio headwaters, a large percentage of the streams in the area are intermittent, meaning that there is no detectable flow during the dry seasons of the year. In its adaptation to the climate in the area, the local wildlife tends to migrate as these streams experience changes in flow throughout the year. The perennial streams, streams generally of higher order flowing year round, in the area are not planned to be subsided where there is less than 200 ft of cover to prevent stream loss.

AEC will monitor all streams as outlined in the Addendum to Part 3, Item D. In the event that a stream's flow is reduced or diminished due to longwall subsidence, AEC will notify the Division of Mineral Resource Management. AEC will also monitor the stream bed monthly up to a five year period to check for natural restoration, with all findings being reported to DMRM on a quarterly basis. If normal flow is not re-established in this five year time frame, AEC will, mitigate the subsidence damage and restore normal flow to the stream. The mitigation efforts will take place immediately after the five year monitoring period has shown no recovery from the flow loss. The type of flow interruption will first be identified to determine if it is loss due to change in grade of the stream bed or fracturing of the rock strata below the stream. For grade change, the stream channel will be re-graded to allow the flow an uninterrupted path and connecting the pools that typically form with grade change from subsidence. In the event the flow is lost due to surface cracks in the channel diverting the water into the ground, the cracks will be grouted with a material suitable for filling the void allowing water to continue with normal flow. Monitoring will continue during mitigation operations to ensure that proper flow has been restored.

Damage Repairs - Cisterns

To date, no repairs have been required for cisterns. If repairs were needed, it would include either replacement of the cistern with a new or used cistern, or could include patching the existing cistern with grout.

Damage Repairs – Wells

Water levels in wells may decrease due to subsidence, reducing the capacity of the well. To remedy this situation, wells may be deepened to restore the reservoir. Dug wells may be grouted to allow them to hold water.

Damage Repairs – Ponds

Pond repairs have not been required to date. If a pond begins to leak after subsidence, clay could be used to seal the leaks. If the dam is damaged, it could be excavated and re-compacted to restore its use. If the decant pipe is damaged, it could be repaired or replaced.

Damage Repairs – Springs

If the spring collection system (i.e., tile) is damaged, it could be repaired or replaced to permit the spring to collect water. If the watering trough is damaged, it could be repaired or replaced. If the drain pipe from the watering trough is damaged, it could be repaired or replaced. In the event of dewatering of the actual groundwater spring source, attempts would be made to develop a spring at a lower elevation location or grout near a dewatered spring.

Damage Repair – Surface Lands

If subsidence due to mining operations causes slippage which reduces the value or reasonably foreseeable use of the surface land, AEC will restore the land to a condition capable of supporting uses it was capable of supporting before subsidence. If slips are triggered by mining activities, these areas would be stabilized in accordance with accepted site specific procedures for such work if technologically and economically feasible. If not feasible, AEC will arrange alternative measures to mitigate the damage.

1. Notwithstanding its mining rights and without waiving or releasing any of its rights, AEC will make repairs of damage caused to surface lands by AEC's mining operations if the damage reduces the foreseeable use or value of the surface lands. If such damages occur, AEC will submit to the Chief within thirty days after the damage occurs:

   a.) Site specific plans for the repair or mitigation of the damage, including a time schedule for performance of the remedial action.

   b.) A request for more time to prepare such plans; or

   c.) Written notification that AEC believes that repair or restoration measures are not technologically feasible, in which case other measures will be described; or if repair or restoration measures are not desired by the owner.

2. Damage to surface lands will be repaired by local contractors. As surface damage occurs, the landowner will be notified and permission to repair the damage will be requested. Surface cracks will usually be repaired by the following method. After the length of the subsidence crack has been determined, a trench will be made in the crack. During the excavation, topsoil will be segregated from subsoil and rock. Upon completion of the excavation, the material will be compacted using the track of the bulldozer or the wheel of the backhoe. Once the soil material has been replaced, the area will be seeded as a hayfield, pasture field, or yard.

ADDENDUM TO PART 4, ITEM B(5)(c)
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AEC will employ a program to monitor surface cracking and settling resulting from subsidence. Areas being mined will be inspected at various intervals, ranging from daily to weekly. These areas will be visually inspected for the subsidence related problems. If a problem is found, the landowner will be notified immediately.

In most cases, surface cracks are expected to open and close in a relatively short period of time; however, some cracks may take weeks to close. For this reason, most cracks will not be repaired until AEC determines that the cracks are not going to close themselves. If the surface cracks are in an area that is commonly traveled by man or livestock, the cracks will be repaired immediately. Surface cracking that is found in areas not commonly traveled may be marked with brightly colored tape. This tape will alert anyone in the area of the depression or opening. If the cracks do not close within the period of time AEC determines is adequate, a contractor will repair the cracks.

Monitoring of these areas will continue for up to six months after mining, and if the cracks reopen, they will once again be repaired. Monitoring of panel areas before mining consists of visual inspection or aerial photo review. AEC's subsidence control program will adequately assure that the value and reasonably foreseeable use of the surface land is maintained.

ADDENDUM TO PART 4, ITEM B(5)(d)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

ANTICIPATED EFFECTS – SURFACE STRUCTURES

Structures

Structures situated over a panel or within the angle of draw may be damaged due to subsidence. Structures are defined as houses, barns, sheds, garages, silos, when the longwall passes directly under a structure, the structure experiences first moderate tensile stress, then moderate compressive stress. As the structure subsides, the end that was undermined first subsides first, causing some tilting away from the advancing face. As the surface over the panel subsides, it takes on the shape of a trough, with the edges remaining in tension and the center in compression. Because the AEC Century face moves quickly, damage to structures from this type of movement is minimized.

The damage that may be expected may involve cracking of plaster, cracking of concrete block or brick, cracking of dirt and cement floors, cracking along mortar joints, and separation of existing cracks. Cracks may close partially or completely after subsidence is complete. Additions to houses may separate away from the original structure. Cracks that occur during separation may close partially or completely after subsidence is complete.

Roads

There is one public road crossing the mining area, Township Road 121 (Goddard Road). AEC posts bonds for all roads to be undermined. The effect of mining on public roads is limited to minor cracking of the pavement or road surface from tension and in a few instances, humping of the surface due to compression. In all instances, the roads have never been closed and repairs have been made by the governing authority and reimbursed by AEC. Roads are inspected frequently during subsidence, and AEC works closely with the governing authority throughout the mining and subsidence.

Utility Installations

AEC anticipates little to no impact on the utility installations over the proposed application area. Utility lines (water, electric, etc.), undergo little or no damage due to subsidence over the underground mining area. The utility lines that are typically damaged are county water lines made of asbestos concrete. No such construction is found in the application area. Other construction materials withstand subsidence well.

ADDENDUM TO PART 4, ITEM B(5)(e)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

MITIGATING MEASURES
ANTICIPATED EFFECTS TO SURFACE STRUCTURES

Damage to Buildings (houses, barns, sheds, garages, etc.)

AEC will notify the owners of the buildings at least six months prior to undermining the buildings. In the event that the buildings are permanently damaged as a result of subsidence, AEC, at the request of the owner, will pay to repair the buildings to their pre-mining conditions.

Damage to Public Roads

AEC will notify the appropriate road authority at least six months prior to undermining the road. AEC will inspect the areas around roads located on steep areas that could be subject to slippage and will repair surface cracks in these areas immediately if necessary to keep water from causing the soil to slip. In the event that roadways are permanently damaged by subsidence, AEC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.

Damage to Public Water Lines

AEC will notify the owner of public water lines at least six months prior to undermining the lines. In the event that the pipelines are damaged by subsidence, AEC, at the request of the public water line authority, will pay to repair the pipeline to its pre-mining conditions. As of May 2003, there have been 32.5 miles of public water lines undermined by longwall mining since January 1990 for the sister mine Powhatan No. 6. During that time, many types of water lines have been undermined, including asbestos-concrete lines, HDPE lines, and PVC lines. During this time period, only one (1) break occurred, and it was located at the start of a longwall panel. This pipe was an asbestos-concrete line, and the construction was such that the end of the pipe broke off when subjected to subsidence forces. There are no asbestos-concrete pipes located within the application area. Should damage occur, however unlikely, the County repairs its own lines and AEC reimburses them.

Damage to Other Utility Lines

AEC will notify the owner of other utility lines (electric lines and sub-stations) at least six months prior to beginning work at the proposed permit area and will take measures to protect the lines that traverse the proposed permit area. At least six months prior to undermining the lines is given to allow the utility owners to take measures deemed necessary and proper to protect their property and the public health and safety. In the event that the utilities are damaged by subsidence, AEC, at the request of the utility owner, will pay to repair the affected utility to its pre-mining conditions.

ADDENDUM TO PART 4, ITEM B(5)(f)
AMERICAN ENERGY CORPORATION
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D-0425-16

MITIGATING MEASURES
ANTICIPATED EFFECTS TO SURFACE STRUCTURES

Notice of Mining

AEC will mail written notice to owners and occupants of surface property or structures of AEC's intent to mine under such property or structures at least six months prior to any mining by AEC under their property.

Pre-Subsidence Survey

A pre-subsidence survey of all structures to be undermined will be conducted by AEC personnel or by someone contracted to do this work and will be used to determine the condition of the structures and facilities prior to the mining unless a private agreement exists between AEC and the landowner. This survey may include, but not limited to: still and video photography; land surveying; making various measurements; interviewing landowners, tenants, or other individuals; and making various drawings. This survey will be performed in accordance with Underground PPD 90-3. Refusal of the landowner to allow a pre-subsidence survey will result in the amount of damage caused by subsidence to be indeterminate. In such cases, AEC will enforce the terms of its deed language, which deeds represent valid agreements between the coal owner and the owner of the surface estates and address all damage that may occur due to the removal of all coal. Such agreements vary from tract to tract, but are shown n the Addendum to Part 1, Item C (8)(b).

ADDENDUM TO PART 4, ITEM B(5)(g)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

After mining, structures will be repaired or replaced as required by law or the owner will be compensated for the diminution in value to the extent required by law. A private agreement may be used to satisfy the requirements of OAC 1501:13-12-03. If repaired, structures will be returned to their pre-mining condition.

Repair of and compensation for damage under the terms and conditions of OAC 1501:13-12-03(F) and (H) can be determined only after review and analysis of the damage in each particular situation. AEC will comply with all legal requirements if subsidence damages occur.

ADDENDUM TO PART 4, ITEM B(5)(h)
AMERICAN ENERGY CORPORATION
CENTURY MINE
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After American Energy Corporation (AEC) has completed its pre-subsidence survey, AEC will notify the Division of Mineral Resource Management if a private agreement (pursuant to OAC 1501:13-12-03(E) between AEC and the landowner exists. If no agreement exists, the Division of Mineral Resource Management, after discussions with AEC, will decide the need for any monitoring of the structure(s). If monitoring is required, AEC will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, AEC shall be released from any and all monitoring requirements.

(6) Will planned subsidence operations be conducted within the angle of draw of urbanized areas, cities, towns, communities, industrial or commercial buildings, major impoundments, or perennial streams?

Yes ☒ No ☐ If "yes," describe any measures or activities that will prevent a condition or practice that could result in an imminent danger to the health or safety of the public.

AEC Proposes that during subsidence of perennial streams, the area of the stream to be undermined will be inspected daily to assure that there are no conditions that could results in an imminent danger to the health or safety of the public. Should such a condition be found, signs will be posted to alert persons that an imminent danger exists. Furthermore, the area where such conditions exist will be cordoned off to prevent the public from accessing the site. Refer to the Application/Hydrology Map, from which it can be seen that no planned subsidence of a perennial stream will occur in the shadow area below the 200-foot cover line.

(7) Will planned subsidence operations be conducted within the angle of draw of transmission pipelines?

Yes ☒ No ☐ If "yes," describe the procedural plan to avoid the creation of a situation of imminent danger to the health and safety of the public.

See attached Addendum to this item

ADDENDUM TO PART 4, ITEM B(7)
AMERICAN ENERGY CORPORATION
CENTURY MINE
D-0425-16

PROCEDURES TO AVOID IMMINENT DANGER – TRANSMISSION LINES

With respect only to utility installations passing over, under, or through a "permit area," Ohio Administrative Code 1501:13-11-02(B) requires that coal mining operations be conducted in a manner which minimizes damage, destruction, or disruption of services provided by such utility installations, unless otherwise approved by the Chief and installation owner. (See e. g., The East Ohio Gas Company v. Division of Reclamation, Case No. RBR-5-91-072 (March 19, 1992)). However, this application area does not include any "permit area." Gas pipelines, which traverse the application shadow area, will be subject to tensile and compressive strains and, according to one pipeline expert; the pipeline coating (if any) could be damaged. Conceivably, the lines could break if left unprotected. If the lines remain buried during subsidence, the friction between the soil and the pipe may not allow the pipe to move freely as the subsidence trough develops. Some areas of the pipe will be placed in tension, others in compression. Protection of these lines is addressed in Section K (5) (e) of this Addendum.

Historically, there were three gas transmission lines owned by Dominion East Ohio (EO) Gas Company that were undermined by American Energy Corporation (AEC) sister subsidiary Ohio Valley Coal Company (OVCC) from 1992 through 2000, and consist of two 30-in. diameter lines (TPL-3 and TPL-15 and one 20-in. diameter line (TPL-9) without incident. East Ohio took precautions to protect the integrity of their lines, including uncovering the lines, bracing the lines, and decreasing the amount of gas pressure in the lines. East Ohio also instrumented the lines with strain gages and surveyed to determine the onset, duration, and magnitude of subsidence. At no time did the strain gages indicate that the pipe lines had reached limits set by East Ohio Gas.

There is one gas transmission line owned by Dominion East Ohio (EO) Gas Company which traverses the Full Coal Recovery of the Shadow Area in Sections 3 and 4 Washington Township. The line is the 30 in. steel line (TPL-15) referenced in the case above. OVCC communicated the timing and location of the mining relative to the location of the gas pipelines daily during undermining as will American Energy Corp. Similar measures will be taken by AEC to assure the gas companies can take the measures needed to protect their lines.

A. FILING OF ADDENDA

If an addendum is needed to present the information required by the items in the permit application, the addendum is to be submitted with the permit application and each page, map, plan or other document in the addendum should include the applicant's name and indicate to what item the addendum applies. For example, "Addendum to Part 3, item A (11)(c)Zebco Coal Company."

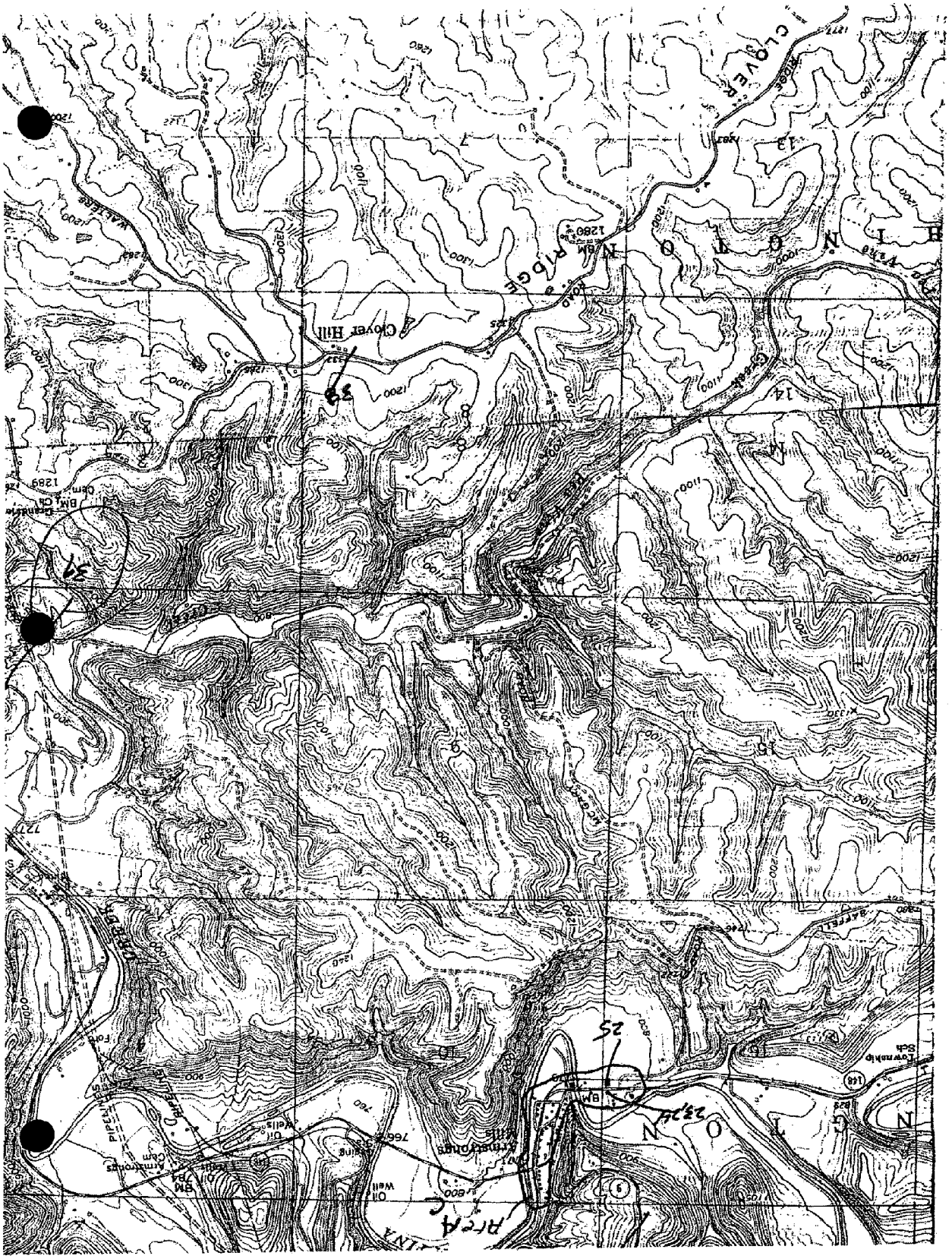
B. Provide the information requested below for all technical data submitted in the application.

Identification of Technical Data *	Person/Organization that Collected Data and Date	Methodology for Collecting Data	Person/Organization that Collected Data and Date	Methodology Used to Analyze Data
Hydrologic Analyses	**Fred Blackman, Quality Environmental Services**	**Grab Samples and Interviews**	**Richard Whitt/Tra-Det Inc., Sept. 2007 thru March 2008**	**Analyze as necessary for parameters**
Drilling Report Attachment 13	**Kerogen Resources 2001, 2001**	**Core Drill**	**Unknown/Tra-Det, 2001, 2002**	**Analyze as necessary for parameters**
Drilling Report Attachment 13	**West Virginia Resources, Inc., 2008**	**Core Drill**	**Luther Hendricks/Tra-Det, 2008**	**Analyze as necessary for parameters**

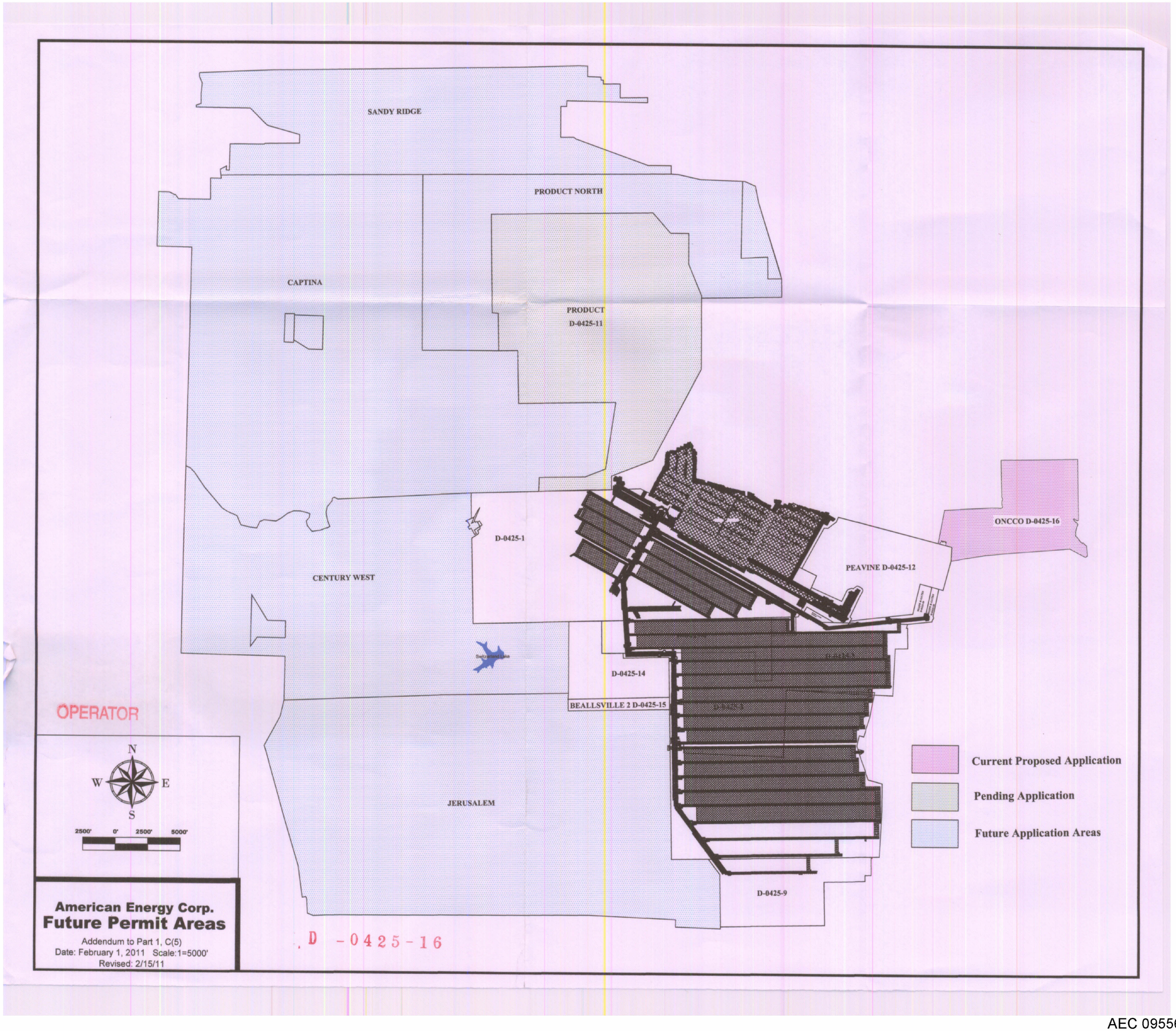
* The technical data is to be identified by referencing the particular item in the application for which the data was used in preparing the response (e.g. Part 2, B (1); Hydrologic Analyses; Part 4, A.

C. Provide the following information for each private or academic research organization or governmental agency contacted in the preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, air quality, and archeological, cultural, and historic features.

Name and Address of Agency/Organization	Name, Position and Phone Number of Contact Person	Type of Information (e.g. Geology)
ODNR-Division of Water 2045 Morse Road, Bldg. B-3 Columbus, Ohio 43229-6693	B. Haiker, Hydrogeologist (614) 265-6690	Hydrology
Tra-Det Inc. R. D. #2, Battle Run Rd. Triadelphia, WV 26059	R. Whitt, Analyst (304) 547-9094	Water Sample Analysis
Geological Records Center 4283 Fountain Square Court Columbus, Ohio 43224	ODNR-Division of Geological Survey (614) 265-6860	Oil/Gas Well Data
William J. Siplivy, P.E., Inc. 4667 Turnberry Trail Stow, Ohio 44224	William J. Siplivy, P.E., C. P.G., President (330) 678-0027	Pillar Stability Analysis
Natural Resource Conservation Service 1119 East Main Street Barnesville, Ohio 43713	Mr. Jeff Bettinger (740) 425-1100 x102	Slip Prone Soils Part 4, Item B-5(b)



AEC 09555


SANDY RIDGE
PRODUCT NORTH
CAPTINA
PRODUCT
D-0425-11
D-0425-1
CENTURY WEST
ONCCO D-0425-16
PEAVINE D-0425-12
D-0425-14
BEALLSVILLE 2 D-0425-15
JERUSALEM
D-0425-9
OPERATOR
N
W
E
S
2500' 0' 2500' 5000'
Current Proposed Application
Pending Application
Future Application Areas
American Energy Corp.
Future Permit Areas
Addendum to Part 1, C(5)
Date: February 1, 2011 Scale:1=5000'
Revised: 2/15/11
D -0425-16

AEC 09556

Pittsburgh No. 8 Coal Seam

Note: 1. AEC = American Energy Corporation
2. NACCO = North American Coal Company
3. NRP = Natural Resource Partners
4. The gas line running within the Application area was located from the Armstrong Mills USGS Quad. Field verified as TPL-15 of Dominion East Ohio.

LOCATION MAP

Scale 1" = 1 Mile
Mapping From Belmont County Highway Map
Drainage Basin: Captina Creek
Located Within the Armstrongs Mills
USGS 7.5 Minute Quadrangles

- Impassable Road
- Roads
- Year 1
- Year 2
- Year 3
- Existing Applications
- 1000' Hydrologic Boundary
- Application Boundary-1327.3 Ac
- —PL— Property Line
- Section Lines
- —PL— Property Line Coal Lease Only
- —CO— ONCO Coal Parcels
- —CO— NACCO Coal Parcels
- —650— IndexCoal Contour (Pittsburg #8 Seam) 10' Intervals
- Coal Contour (Pittsburg #8 Seam) 5' Intervals
- Test Boring

I, the undersigned, hereby certify that this map is correct, and shows to the best of my knowledge and belief all the information required by Chapter 1513 of the Revised Code and Rules adopted thereunder.

STATE OF OHIO CHARLES R KALLIGER S-7139 REGISTERED PROFESSIONAL SURVEYOR

REG.SURVEYOR #

ACKNOWLEDGED BEFORE ME A NOTARY PUBLIC THIS 9th DAY OF March 2011

PENNY J. HEWITT NOTARY PUBLIC
Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

No.	Revision/Draftsman	Date
2	JRS	2/15/11
1	JRS	1/31/11

American Energy Corporation

43821 Mayhugh Hill Road
Beallsville, Ohio 43716
Phone: 740.926.9182 Fax: 740.926.9138

Structure Contour, Timing Coal Deed Map
Situated in Washington Township T-5N, R-4W of Belmont County, Ohio
Sections: 3, 4, 9, 10 and 15

Addendum to Part 4, B(1)

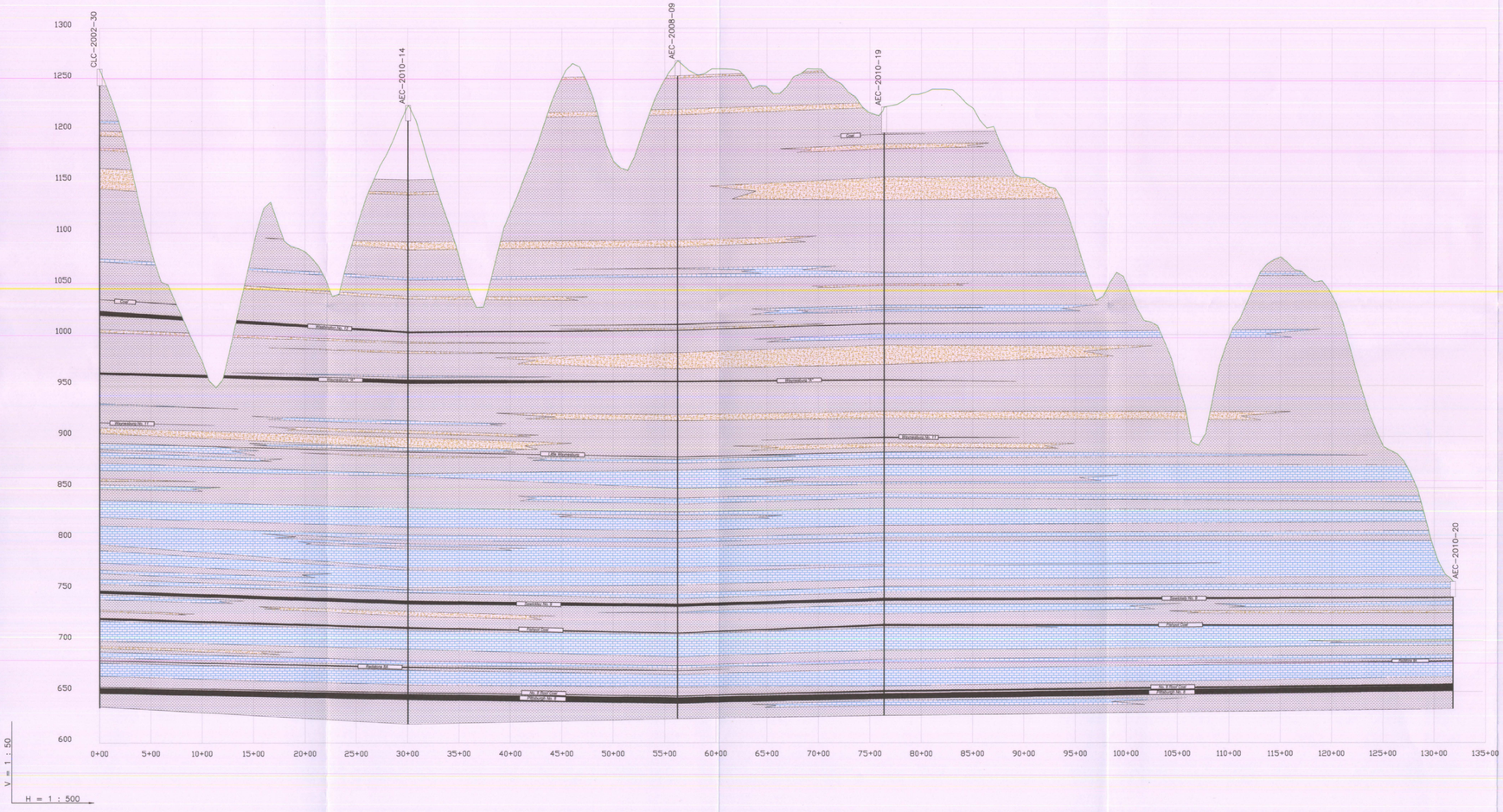
Project	Application D-0425-16
Date	November 11, 2010
Scale	1" = 500'
Drwn. By:	JRS

OPERATOR

D - 0425 - 16

2592' 0 2592' 5000'

AEC 09557



Casing/Core Loss

Sandstone

Shale\Claystone

Limestone

Coal

No.	Revision/Draftsman	Date

American Energy Corporation

43521 Mayhugh Hill Raod
Beallsville, OH 43716

Phone: 740.926.9152 Fax: 740.926.9138

Geologic Cross Section

Project	American Energy Corporation
Date	January 25, 2011
Scale	Vertical: 1" = 50' Horizontal: 1" = 500'

OPERATOR

7D - 0425 - 16

AEC 09558

LOCATION MAP

Scale 1" = 1 Mile
Mapping From Belmont County Highway Map
Drainage Basin: Captina Creek
Located Within the Armstrongs Mills
USGS 7.5 Minute Quadrangles

I, the undersigned, hereby certify that this map is correct, and shows to the best of my knowledge and belief all the information required by Chapter 1513 of the Revised Code and Rules adopted thereunder.

STATE OF OHIO
CHARLES R. KALUGER
S-7109
REGISTERED PROFESSIONAL SURVEYOR

REG. SURVEYOR #

ACKNOWLEDGED BEFORE ME A NOTARY PUBLIC(NOTARIAL) THIS 11TH DAY OF March 2011

Notary Public
State of Ohio
My Commission Exp. Feb. 11, 2013

NOTARY PUBLIC STATE OF OHIO

No.	Revision/Draftsman	Date
2	JRS	2/15/11
1	JRS	1/31/11

American Energy Corporation

43621 Mayhugh Hill Road
Beallsville, Ohio 43716
Phone: 740.926.9152 Fax: 740.926.9138

Slip Prone Soils Map

Situated in Washington Township T-5N, R-4W of Belmont County, Ohio
Sections: 3, 4, 9, 10 and 15

Project: Application D-0425-16
Date: November 11, 2010
Scale: 1" = 500'
Drawn By: JRS

OPERATOR
D - 0425 - 16

Map Data Source:

Soil Survey of Belmont County, Ohio
United States Department of Agriculture, Soil Conservation Service in cooperation with
Ohio Department of Natural Resources, Division of Lands and Soil, and Ohio Agricultural research and Development Center.

AEC 09559